

1989 SHORTFORM CATALOG



SGS-THOMSON
MICROELECTRONICS

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SGS-THOMSON
MICROELECTRONICS

Use in life support must be expressly authorized

SGS - THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without the express written approval of SGS - THOMSON Microelectronics.

As used here in :

- 1 - Life support devices or systems are devices or systems which, are intended for surgical implant into the body or support to sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
- 2 - A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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MODEMS

Type	Description	Package
EF7910	Monochip FSK modem, V. 23, V. 21, Bell 103, Bell 202	DIP28
EF7910	Modem analog front end, evaluation board	
TS7515EVA	V. 22 and Bell 212 modem evaluation board	
TEA 7868	Line interface (DAA)	DIP8
TS68950	Modem analog front end, transmitter	DIP24
TS68951	Modem analog front end, receiver	DIP28
TS68952	Modem analog front end, clock generator	DIP28
TS7513	Monochip FSK modem, V. 23	DIP22
TS7514	Monochip FSK modem, V. 23, DTMF	DIP28, PLCC28
TS7515	Monochip DPSK, FSK, V. 22, Bell 212, Bell 103	DIP28
TS7524	Chip set modem, V. 22 bis, V. 22, V. 23, V. 21, Bell 212, Bell 103	DIP24, DIP28, DIP48
TS7532	Chip set modem, V. 32	DIP24, DIP28, DIP48
TS75320	Digital echo canceller for V. 32 modems	DIP48
TS7542	Monochip analog front end	DIP40, PLCC44

DIGITAL SIGNAL PROCESSORS

Type	Description	Package
TS68930HDS	Multi - processor development station (1 to 4 DSP)	
TS68930EPROM - V	Vertical EPROM emulator for TS68930	
TS68930EMU	Evaluation and emulation board	
TS68930SP - PC	Software package for TS 68930DSP	
TS68930	16 / 32 bit DSP - 6.25 MIPS - 1.2K x 32 program ROM	DIP48
TS68931	16 / 32 bit DSP - 6.25 MIPS - External ROM (64K)	PGA84

SWITCHING CONNECTION AND CONCENTRATION

ANALOGUE CROSS POINTS

Type	Description	Package
MO79	2x2x2 cross point	DIP14
MO89	2x8 cross point matrix	DIP/CERDIP16
MO93	12x8 cross point matrix	DIP40
M3493	12x8 cross point matrix	DIP40
M3494	16x8 cross point matrix	DIP40

DIGITAL CROSS POINTS

Type	Description	Package
MO44	128x128 digital switching matrix	CERDIP28
MO88	256x256 digital switching matrix	CERDIP40

SPECIAL FUNCTIONS

Type	Description	Package
EF73321	PCM clock recovery	DIP16
EF7333	PCM communication terminal	DIP28
M116	PCM conference circuit	CERDIP24

SUBSCRIBER BOARD

SUBSCRIBER LINE INTERFACE CIRCUITS

Type	Description	Package
L3000 L3010 L3030 L3090 L3100B1 (1) L3101B (1) LB1011 LB1013 TDB7711 TDB7722 TPA series (1) TPB series (1)	Line interface Control unit with serial interface Control unit with parallel / serial interface Control unit with parallel interface Unidirectional programmable voltage and current suppressor Unidirectional programmable voltage and current suppressor Telephone line battery feed 85 V dual op - amp Slic control unit Line interface Trisil Trisil	FLEXIWATT 15 Cerdip 28 Cerdip 28, PLCC44 Cerdip 28 MINIDIP MINIDIP MINIDIP MULTIWATT 15 Cerdip 28 MULTIWATT 15 F126 CB-429
(1) See this chapter - paragraph «TELEPHONE SET - Trisil».		

TRISIL

Type	I_{RM} @ V_{RM} max		$V_{(BR)}$ @ I_R min		$V_{(BO)}$ @ $I_{(BO)}$ max (mA)			I_H min	V_T typ	Package
	(μA)	(V)	(V)	(mA)	(V)	nom	max	(mA)	(V)	
L3121B (1)	5/8	60/90	100	1	180	200	500	150	2	SIP 4
THBT 200D	10	180	200	1	290	—	1000	150	3	TO 220
THDT 58D	10	56	58	1	80	—	1000	150	3	TO 220
(1) Bidirectional programmable voltage and current suppressor.										

CODEC / FILTER

Type	Description	Package
ETC5040 ETC5040-X M5116 M5156 MK5151	PCM filter PCM filter - Extended temperature range Mu-law serial output CODEC A-law serial output CODEC Mu-law serial output CODEC	Cerdip16, PLCC20 Cerdip16 Cerdip16 Cerdip16 Cerdip24

COMBO

Type	Description	Package
ETC50S64 ETC50S67 ETC5054 ETC5054 - X ETC5056 ETC5057 ETC5057 - X ETC5064 ETC5067 M5913 M5914 M5917 TS5070 TS5071 TS5076	Mu-law synchronous serial COMBO with power amplifiers A-law synchronous serial COMBO with power amplifiers Mu-law serial output COMBO Mu-law serial output COMBO, extended temperature A-law parallel output COMBO A-law serial output COMBO A-law serial output COMBO, extended temperature Mu-law serial COMBO with power amplifiers A-law serial COMBO with power amplifiers Universal synchronous COMBO Universal asynchronous COMBO with signalling A-law serial output COMBO, low power Universal programmable COMBO II Universal programmable COMBO II ISDN / Digital phone programmable COMBO II	DIP16 DIP16 Cerdip16, PLCC20 Cerdip16 Cerdip20 Cerdip16, PLCC20 Cerdip16 Cerdip16, PLCC20 Cerdip16, PLCC20 Cerdip16, PLCC20 Cerdip20 Cerdip24 Cerdip16 Cerdip28, PLCC28 Cerdip / DIP20 DIP20

TELEPHONE SET

SPEECH CIRCUITS

Type	Description	Package
L3280	Very low drop speech circuit	DIP14
LS156	Speech circuit with MF interface (for piezoceramic transducers)	DIP16, SO20L
LS285	Speech circuit	DIP14
LS356	Speech circuit with MF interface (for dynamic transducers)	DIP16
LS588	Speech circuit with programmable gains and power down	DIP16
LS656	Low drop speech circuit with MF interface (for dynamic transducers)	DIP16, SO20L
PBL3726 Series	Mask programmable speech circuits	DIP16/18
TEA7037	Monochip speech and tone dialers	DIP28
TEA7050	Speech for high range sets	DIP28
TEA7051	Speech for medium range sets	DIP24
TEA7053	Speech for low range sets	DIP20
TEA7062	Speech for low range sets	DIP18

TONE RINGERS/RINGING DETECTORS

Type	Description	Package
L3240	Two tone ringer with push - pull output	MINIDIP
LB1006	Telephone ringing detector	MINIDIP
LS1240	Two tone ringer	MINIDIP / SO8
LS1240A	Two tone ringer	MINIDIP / SO8
LS1241	Two tone ringer	MINIDIP / SO8
M764	Programmable three tone ringer	DIP16
ML8204	Two tone ringer	MINIDIP
ML8205	Two tone ringer	MINIDIP
SAA1094	Three tone ringer	DIP14

MICROPHONE PREAMPLIFIER

Type	Description	Package
LS188	Microphone preamplifier (dynamic and piezoceramic transducers)	MINIDIP

LINE INTERFACE

Type	Description	Package
L3845	Trunk interface	MINIDIP
LH1028	Telephone interface circuit	MINIDIP

LOUDSPEAKING

Type	Description	Package
TEA7031	Electronic telephone : ring + monitor amplifier	DIP28
TEA7531	Monitor amplifier with anti - howling	DIP16 / SO16
TEA7532	Monitor amplifier with anti - howling	DIP16 / SO16

TELEPHONE SET

HANDS FREE

Type	Description	Package
TEA7540	Hands free circuit for all range sets	DIP28

DTMF DIALER/ GENERATOR

Type	Description	Package
EFG7189 EFG71891 M761	Parallel input programmable tone generator Serial input programmable tone generator MF tone generator	DIP14 DIP8 DIP18

TonePulse™ DIALERS

Type	Description	Package
M3561 MK5370 MK5371 MK53721 MK53731 MK5375 MK5376 MK53761 MK53762	Pulse dialer TonePulse™ dialer with last number redial TonePulse™ dialer with BCD input World dialer™ TonePulse™ - 16 country options selectable TonePulse™ dialer with redial TonePulse™ dialer with 10 number memory Full feature TonePulse™ repertory dialer TonePulse™ repertory dialer continuous tone TonePulse™ repertory dialer w/single button recall	DIP16 DIP18 DIP18 DIP20 DIP18 DIP18 DIP24 DIP18 DIP20

SPECIAL FUNCTIONS

Type	Description	Package
LB1020 LB1021 LB1026 LS025 LS204 LS404 TEB1033 TEB4033	Speakerphone kit Speakerphone kit Voice frequency level expander Balanced modulator Dual operational amplifier Quad operational amplifier Dual operational amplifier Quad operational amplifier	DIP24 DIP18 MINIDIP TO100, DIP14 MINIDIP / SO8 DIP14 / SO14 MINIDIP / SO8 DIP14 / SO14

TRANSIL

Type	Description	Package
BZW 04 series BZW 50 series P6KE series P7T series 1N 5634 series 1N 5908 1N 6040 series 1.5 KE series	400 W / 1 ms expo - Uni and Bidirectional devices 1500 W / 1 ms expo - Uni and Bidirectional devices 600 W / 1 ms expo - Uni and Bidirectional devices 700 W / 1 ms expo - Uni and Bidirectional devices 1500 W / 1 ms expo - Unidirectional devices 1500 W / 1 ms expo - Unidirectional device 1500 W / 1 ms expo - Bidirectional devices 1500 W / 1 ms expo - Uni and Bidirectional devices	F 126 AG CB-417 CB-417 DO 13 CB-429 DO 13 CB-429
See chapter «GENERAL PURPOSE & INDUSTRIAL» - paragraph «PROTECTION».		

TELEPHONE SET



TRISIL : TELEPHONE PROTECTION

Bidirectional type	$I_{RM} \text{ max @ } V_{RM}$		$V_{(BR)} \text{ min @ } I_R$		$V_{(BO)} \text{ max}$	$I_{(BO)} \text{ max}$	$I_H \text{ min}$	Package
	(μA)	(V)	(V)	(mA)	(V)	(mA)	(mA)	

$I_{pp} = 100 \text{ A (8-20 } \mu s \text{ expo.)}$

TPA 62A - 12 or 18	2	56	62	1	82	300	12 suffix for 120 mA	F 126
TPA 68A - 12 or 18	2	61	68	1	90	300		
P TPA 100A - 12 or 18	2	90	100	1	133	300		
TPA 100B - 12 or 18	2	90	100	1	121	300		
TPA 110A - 12 or 18	2	99	110	1	147	300		
TPA 110B - 12 or 18	2	99	110	1	133	300		
P TPA 120A - 12 or 18	2	108	120	1	160	300		
TPA 120B - 12 or 18	2	108	120	1	145	300		
P TPA 130A - 12 or 18	2	117	130	1	173	300		
TPA 130B - 12 or 18	2	117	130	1	157	300		
TPA 200A - 12 or 18	2	180	200	1	267	300	18 suffix for 180 mA	F 126
TPA 200B - 12 or 18	2	180	200	1	241	300		
P TPA 220A - 12 or 18	2	198	220	1	293	300		
TPA 220B - 12 or 18	2	198	220	1	265	300		
P TPA 240A - 12 or 18	2	216	240	1	320	300		
TPA 240B - 12 or 18	2	216	240	1	289	300		
P TPA 270A - 12 or 18	2	243	270	1	360	300		
TPA 270B - 12 or 18	2	243	270	1	325	300		

$I_{pp} = 150 \text{ A (8-20 } \mu s \text{ expo.)}$

TPB 62A - 12 or 18	2	56	62	1	82	300	12 suffix for 120 mA	CB-429
TPB 68A - 12 or 18	2	61	68	1	90	300		
P TPB 100A - 12 or 18	2	90	100	1	133	300		
TPB 100B - 12 or 18	2	90	100	1	121	300		
TPB 110A - 12 or 18	2	99	110	1	147	300		
TPB 110B - 12 or 18	2	99	110	1	133	300		
P TPB 120A - 12 or 18	2	108	120	1	160	300		
TPB 120B - 12 or 18	2	108	120	1	145	300		
P TPB 130A - 12 or 18	2	117	130	1	173	300		
TPB 130B - 12 or 18	2	117	130	1	157	300		
TPB 200A - 12 or 18	2	180	200	1	267	300	18 suffix for 180 mA	CB-429
TPB 200B - 12 or 18	2	180	200	1	241	300		
P TPB 220A - 12 or 18	2	198	220	1	293	300		
TPB 220B - 12 or 18	2	198	220	1	265	300		
P TPB 240A - 12 or 18	2	216	240	1	320	300		
TPB 240B - 12 or 18	2	216	240	1	289	300		
P TPB 270A - 12 or 18	2	243	270	1	360	300		
TPB 270B - 12 or 18	2	243	270	1	325	300		

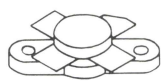
P : Preferred device.

Other voltage on request (75V - 82V - 91V - 150V - 180V).

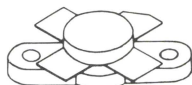
PROTECTION CIRCUITS

Type	I_{RM} @ V_{RM} max		$V_{(BR)}$ @ I_R min		$V_{(BO)}$ @ $I_{(BO)}$ max				I_H min	V_T typ	Package
	(μA)	(V)	(V)	(mA)	(V)	min	nom	max	(mA)	(V)	
L3100B1	6/40	60/250	255	1	350	200	—	500	210	2	MINIDIP
L3101B	5/8	60/90	100	1	180	—	200	500	150	2	MINIDIP
LS5018B	5	16	17	1	22	—	1300	—	200	2	MINIDIP
LS5060B	10	50	60	1	85	—	1000	—	200	2	MINIDIP
LS5120B1	20	100	120	1	180	500	—	1250	250	2	MINIDIP

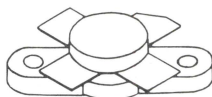
RF & MICROWAVE TRANSISTORS



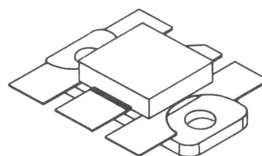
.380 4LFL



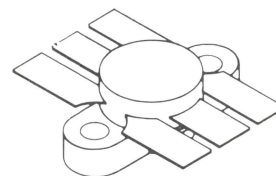
.500 4LFL



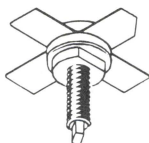
.550 4LFL



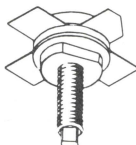
.400 x .425 6LFL



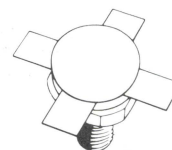
.500 6LFL



.380 4L STUD



.500 4L STUD



.550 4L STUD

2 - 30 MHz LINEAR SSB APPLICATIONS

Type		Package	Config.	V _{CC} (V)	P _{out} (PEP) (W)	f _o (MHz)	P _{in} (W)	G _{p min} (dB)	IMD max (dB)
P/N	SD #								
SD 1285		.380 4LFL	CE	12.5	20	30	0.63	15	—30
SD 1451		.500 4LFL	CE	12.5	50	30	1.6	15	—26
SD 1405		.500 4LFL	CE	12.5	75	30	3.8	13	—30
SD 1487		.500 4LFL	CE	12.5	100	30	6.3	12	—30
SD 1224-10	SD 1724-1	.380 4LFL	CE	28	30	30	0.475	18	—28
TH 208		.500 4LFL	CE	28	65	30	0.25	18	—30
SD 1407		.500 4LFL	CE	28	100	30	3.15	15	—30
TH 416		.500 4LFL	CE	28	130	30	8.2	12	—30
TH 560	SD 1730	.500 4LFL	CE	28	220	30	9.5	12	—30
TH 513	SD 1733	.380 4L STUD	CE	50	75	30	3	14	—30
THA 15	SD 1726	.500 4LFL	CE	50	150	30	6	14	—30
THX 15	SD 1727	.550 4L STUD	CE	50	150	30	6	14	—30
SD 1411	SD 1731	.400 x .425 6LFL	CE	40	200	30	5	16	—30
TH 562		.500 4LFL	CE	50	220	30	12	13	—30
TH 430		.550 4LFL	CE	50	250	30	10	14.5	—30
TH 430	SD 1728	.550 4LFL	CE	50	250	30	10	14.5	—30

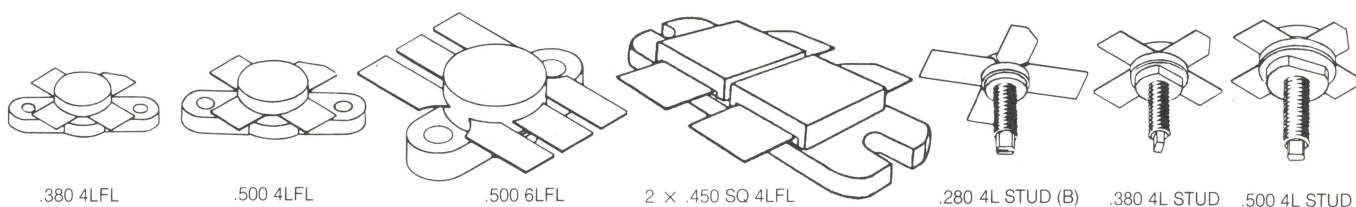
SD # is the code used in our invoicing system.

27 ... 88 MHz CLASS C, FM OPERATION

Type		Package	Config.	V _{CC} (V)	P _{out} (W)	f _o (MHz)	P _{in} (W)	G _{p min} (dB)
P/N	SD #							
SD 1290		.500 4L STUD	CE	12.5	40	50	4	10
SD 1451		.500 4LFL	CE	12.5	55	50	5.5	10
SD 1446		.380 4LFL	CE	12.5	70	50	7	10
SD 1405		.500 4LFL	CE	12.5	100	50	20	7
SD 1407-8		.500 6LFL	CE	28	100	80	11	9.5
SD 1403	SD 1733	.500 4LFL	CE	45	45	80	3.5	11
TH 513		.380 4L STUD	CE	50	75	70	7	10
SD 1406		.500 4LFL	CE	40	150	80	15	10
THA 15		.500 4LFL	CE	50	150	70	19	9
THX 15	SD 1727	.550 4L STUD	CE	50	150	70	19	9
TH 430	SD 1728	.550 4LFL	CE	50	250	70	25	10

SD # is the code used in our invoicing system.

RF & MICROWAVE TRANSISTORS



55 ... 108 MHz CLASS C FOR FM TRANSMITTERS

Type	Package	Config.	V _{CC} (V)	P _{out} (W)	f _o (MHz)	P _{in} (W)	G _p (dB)	η _c (%)
SD 1476* (1)	.2 x .450 SQ 4LFL	CE	28	240	55-88	20	11	50
SD 1457	.500 4LFL	CE	28	75	108	7.5	10	75
SD 1460	.500 4LFL	CE	28	160	108	20	9	75
SD 1483 (1)	.2 x .450 SQ 4LFL	CE	28	250	108	25	10	55

* Class AB, I_{CQ} = 2 x 400 mA. (1) Internal input matched.

108 ... 152 MHz CLASS C FOR AIRCRAFT COMMUNICATIONS

Type	Package	Config.	V _{CC} (V)	P _{out} min (W)	f _o (MHz)	P _{in} (W)	G _p min (dB)
SD 1478	.380 4L STUD	CE	6.5	3.2	136	0.2	8.1
SD 1479	.380 4L STUD	CE	6.5	5	136	1	7
SD 1430	.380 4L STUD	CE	6.5	10	136	2	7
SD 1220-1	.380 4L FL	CE	28	7	136	1	8.4
SD 1013	.380 4L STUD	CE	28	10	150	1	10
SD 1013-3	.380 4L FL	CE	28	10	150	1	10
SD 1222-6	.380 4L STUD	CE	28	15	136	2.3	11
SD 1222-5	.380 4L FL	CE	28	20	136	3	8.2
SD 1015	.380 4L STUD	CE	28	30	150	3	10
SD 1224-2	.380 4L FL	CE	28	40	175	7	7.6
SD 1219-5	.380 4L STUD	CE	28	50	136	5	10
SD 1219	.380 4L STUD	CE	28	60	150	12	7
SD 1019	.500 4L STUD	CE	28	80	136	10	9
SD 1438-2	.380 4L FL	CE	28	100	136	16	7
SD 1480*	.500 6L FL	CE	28	125	136-175	12	9.2

* Internally input matched.

2 ... 400 MHz MOS FIELD EFFECT, N CHANNEL BROADBAND LARGE SIGNAL APPLICATIONS

Type	Package	Config.	V _{DD} (V)	I _{DQ} (mA)	P _{out} (W)	f _o (MHz)	P _{in} (W)	G _p (dB)
SD 1900	.380 4LFL	CS	28	50	5	400	0.25	13
SD 1900-1	.280 4L STUD (B)	CS	28	50	5	400	0.25	13
SD 1902	.380 4LFL	CS	28	50	15	400	1.5	10
SD 1902-1	.280 4L STUD (B)	CS	28	50	15	400	1.5	10
SD 1904	.380 4LFL	CS	28	50	30	400	3.75	9
SD 1904-1	.280 4L STUD (B)	CS	28	50	30	400	3.75	9
SD 1905	.380 4LFL	CS	28	50	45	225	2.25	13
SD 1906-1	.500 4LFL	CS	28	300	60	225	3.0	13
SD 1907	.500 4LFL	CS	28	50	80	225	8.0	10
SD 1908-1	.500 4LFL	CS	28	500	120	225	12.0	10
SD 1912	.500 4LFL	CS	28	250	150	225	37.5	6
SD 1920	.500 4LFL	CS	50	250	150	225	18.75	9

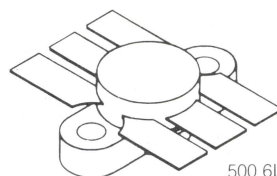
RF & MICROWAVE TRANSISTORS



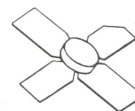
TO 39



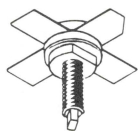
.380 4LFL



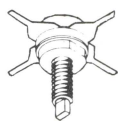
.500 6LFL



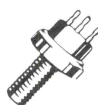
.280 4LSL (B)



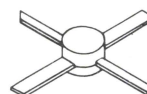
.380 4L STUD



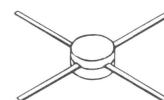
.380 NARROW 4L STUD



TO 60



XO-72 SL



TO-117 SL

130 ... 230 MHz CLASS C FOR FM MOBILE APPLICATIONS

Type		Package	Config.	V _{CC} (V)	P _{out} min (W)	f _o (MHz)	P _{in} (W)	G _p min (dB)	η _c min (%)
P/N	SD #								
SD 1134-5		.280 4LSL (B)	CE	7.5	0.5	150	0.1	7	—
SD 1080-2		XO-72 SL	CE	7.5	0.75	175	0.1	8	—
SD 1115-2		TO-117 SL	CE	7.5	2	175	0.25	8	—
SD 1012-4		.280 4LSL (B)	CE	7.5	2.5	175	0.79	5	—
SD 1135-3		.280 4LSL (B)	CE	7.5	2.5	150	0.22	11	—
2N 4427	SD 1484	TO-39	CE	12	1	175	0.1	10	—
SD 1127		TO-39	CE	12.5	4	175	0.4	10	—
2N 6080	SD 1012	.380 4L STUD	CE	12.5	4	175	0.25	12	60
SD 1012-3		.380 4LFL	CE	12.5	6	175	0.75	9	—
SD 1133		.380 4L STUD	CE	12.5	10	175	1	10	—
SD 1143		.380 4L STUD	CE	12.5	10	175	1	10	—
SD 1143-1		.380 4LFL	CE	12.5	10	175	1	10	—
2N 6081	SD 1014-2	.380 4L STUD	CE	12.5	15	175	3.5	6.3	60
SD 1014-6		.380 4LFL	CE	12.5	15	175	3.5	6.3	—
2N 6082	SD 1229-7	.380 4L STUD	CE	12.5	25	175	6	6.2	50
SD 1229-1		.380 4LFL	CE	12.5	25	175	7.9	5	—
SD 1272		.380 4L STUD	CE	12.5	25	175	3	9.2	—
SD 1272-2		.380 4LFL	CE	12.5	25	175	3	9.2	—
SD 1274		.380 4L STUD	CE	12.5	30	175	3	10	—
SD 1274-1		.380 4L FL	CE	12.5	30	175	3	10	—
2N 6083	SD 1229-8	.380 4L STUD	CE	12.5	30	175	8.1	5.7	50
2N 6084	SD 1018	.380 4L STUD	CE	12.5	40	175	14	4.5	50
SD 1018-6		.380 4LFL	CE	12.5	40	175	14	4.5	70
SD 1018-15		.380 4LFL	CE	12	40	175	12	4.5	70
SD 1278		.380 4L STUD	CE	12.5	40	175	10	6	—
SD 1275		.380 4L STUD	CE	12.5	40	175	5	9	—
SD 1275-1		.380 4LFL	CE	12.5	40	175	5	9	—
SD 1428*		.500 6LFL	CE	12.5	45	175	10	6.5	50
SD 1477*		.500 6LFL	CE	12.5	100	175	25	6	—
SD 1441*		.500 6LFL	CE	12.5	150	175	40	5	—
SD 1021		.380 4L STUD	CE	12.5	5.5	230	1.3	6.2	60
SD 1022		.380 4L STUD	CE	12.5	30	230	5.5	7.4	60
2N 5589	SD 1212-2	.380 NARROW 4L STUD	CE	13.6	3	175	0.2	8.2	50
2N 3924	SD 1064	TO-39	CE	13.6	4	175	1	6	70
2N 3926	SD 1062	TO-60	CE	13.6	7	175	1.7	5.4	70
2N 5590	SD 1214-12	.380 4L STUD	CE	13.6	10	175	2.3	5.2	50
2N 3927	SD 1072	TO-60	CE	13.6	12	175	4	4.8	80
2N 5591	SD 1216	.380 4L STUD	CE	13.6	25	175	8.3	4.4	50
SD 1273		.380 4L STUD	CE	13.6	40	160	5	9	55
2N 3553	SD 1065	TO-39	CE	28	2.5	175	0.25	10	—
2N 5641	SD 1220	.380 NARROW 4L STUD	CE	28	7	175	0.45	8.4	60
2N 3632	SD 1070	TO-60	CE	28	13.5	175	3.5	5.8	—
2N 5642	SD 1222-10	.380 4L STUD	CE	28	20	175	1.4	8.2	60
2N 5643	SD 1224	.380 4L STUD	CE	28	40	175	6.6	7.6	60

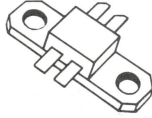
* Internally input matched.

SD # is the code used in our invoicing system.

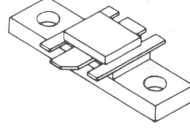
RF & MICROWAVE TRANSISTORS



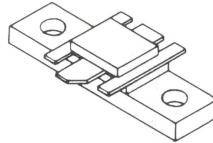
TO-39



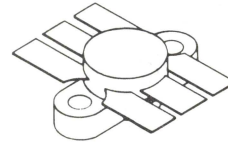
.250 x .320 4LFL



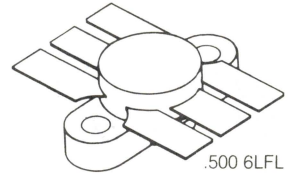
.230 6LFL



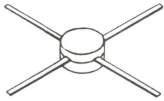
.400 6LFL



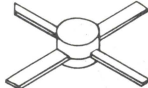
.380 6LFL



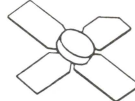
.500 6LFL



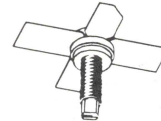
TO-117 SL



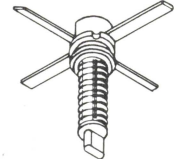
XO-72 SL



.280 4L SL (B)



.280 4L STUD (B)



XO-72

450 ... 512 MHz CLASS C FOR MOBILE APPLICATIONS

Type		Package	Config.	V _{CC} (V)	P _{out} min (W)	f _o (MHz)	P _{in} (W)	G _p min (dB)
P/N	SD #							
SD 1132-4		XO-72 SL	CE	7.5	0.25	470	0.02	11
SD 1115-2		TO-117 SL	CE	7.5	0.85	470	0.2	6
SD 1482		.280 4L STUD (B)	CE	7.5	3	470	0.475	8
SD 1080-6		XO-72 SL	CE	12.5	0.5	470	0.05	10
SD 1080-7		XO-72	CE	12.5	0.5	470	0.05	10
SD 1132-5		XO-72	CE	12.5	0.6	470	0.03	13
SD 1444		TO-39	CE	12.5	2	470	0.32	8
2N 5944	SD 1144	.280 4L STUD (B)	CE	12.5	2	470	0.25	9
SD 1134		.280 4L STUD (B)	CE	12.5	2	470	0.2	10
2N 5945	SD 1145	.280 4L STUD (B)	CE	12.5	4	470	0.65	8
SD 1150		.280 4L STUD (B)	CE	12.5	4	470	0.635	8
SD 1150-3		.280 4L SL (B)	CE	12.5	4	470	0.635	8
SD 1135		.280 4L STUD (B)	CE	12.5	5	470	0.6	8.5
SD 1433		.280 4L STUD (B)	CE	12.5	10	470	1.3	8
2N 5946	SD 1146	.280 4L STUD (B)	CE	12.5	10	470	2.5	6
SD 1136		.280 4L STUD (B)	CE	12.5	10	470	2.5	6
SD 1410-1		.380 6LFL	CE	12.5	10	512	2.5	6
SD 1429*		.500 6LFL	CE	12.5	12	470	2.4	7.8
SD 1429-3*		.500 6LFL	CE	12.5	15	470	2.7	7.5
SD 1422*		.500 6LFL	CE	12.5	25	470	6	6.2
SD 1488*		.500 6LFL	CE	12.5	38	470	9	5.8
SD 1434*		.500 6LFL	CE	12.5	45	470	14	5
SD 1499-1*		.500 6LFL	CE	12.5	65	470	22	4.7

* Internally input matched.

SD # is the code used in our invoicing system.

836 ... 960 MHz CLASS C FOR LAND MOBILE APPLICATIONS

Type		Package	Config.	V _{CC} (V)	P _{out} min (W)	f _o (MHz)	P _{in} (W)	G _p min (dB)
P/N	SD #							
SD 1402		XO-72 SL	CB	12.5	0.3	870	0.048	8
SD 1409		XO-72	CB	12.5	2	870	0.35	8
SD 1410*		.380 6LFL	CB	12.5	6	836	0.95	8
SD 1410-3*		.230 6LFL	CB	12.5	7	836	0.95	7.5
SD 1418*		.230 6LFL	CE	12.5	15	836	4.5	5.2
SD 1412*		.380 6LFL	CB	12.5	18	836	4.5	6
SD 1412-3*		.230 6LFL	CB	12.5	18	836	4.5	6
SD 1421*		.230 6LFL	CB	12.5	25	836	7	5.5
SD 1098*		.380 6LFL	CB	12.5	25	836	7	5
SD 1414*		.230 6LFL	CB	12.5	45	836	12.5	4.5
SD 1399		XO-72	CE	24	2	900	0.25	9
SD 1400*		.230 6LFL	CB	24	9	875	1	9.5
SD 1400-2		.230 6LFL	CB	24	14	900	1.5	9.7
SD 1400-3		.230 6LFL	CB	24	14	960	1.4	9.5
SD 1423**		.230 6LFL	CE	24	15	960	2.4	8
SD 1424**		.250 x .320 4LFL	CE	24	30	960	5.3	7.5
SD 1494*		.230 6LFL	CB	24	30	900	3.75	7.8
SD 1495-3*		.230 6LFL	CB	24	30	960	6	7
SD 1495*		.230 6LFL	CB	24	35	870	6	7.6
SD 1496-3		.230 6LFL	CB	24	55	960	10	7.4
SD 1496*		.230 6LFL	CB	24	60	900	12.5	7.5
SD 1426**		.400 6LFL	CB	24	60	900	12	7

* Internally input matched.

** Internally input/output matched.

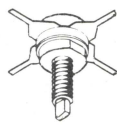
RF & MICROWAVE TRANSISTORS



TO-39



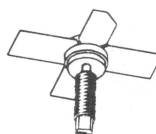
TO-60



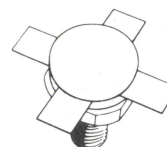
.380 NARROW 4L STUD



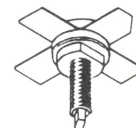
.500 4L STUD



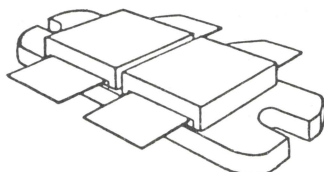
.280 4L STUD (B)



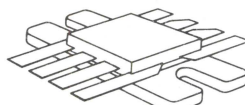
.550 4L STUD



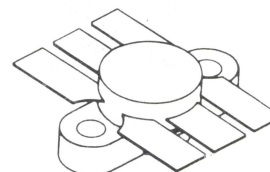
.380 4L STUD



2 x .450 SQ 4LFL



400 BAL FL



.500 6LFL

WIDEBAND VHF - UHF CLASS C FOR ECM AND RADIO LINKS APPLICATIONS

Type		Package	Config.	V _{CC} (V)	P _{out} min (W)	Frequency range (MHz)	P _{in} (W)	G _p min (dB)	η_c min (%)	C _{22b} max (pF)	R _{th} (j-c) (°C/W)
P/N	SD #										
2N 3866	SD 1037-1	TO-39	CE	28	1	400	0.1	10	—	—	—
2N 5090	SD 1037-4	TO-60	CE	28	1.2	400	0.2	7.8	45	3.5	35
2N 5635	SD 1240	.380 NARROW 4L STUD	CE	28	2.5	400	0.6	6.2	50	10	23.3
2N 3375	SD 1050	TO-60	CE	28	3	400	1	4.7	—	10	15
2N 4440	SD 1060	TO-60	CE	28	5	400	1.7	4.7	45	10	15.1
2N 5636	SD 1242	.380 NARROW 4L STUD	CE	28	7.5	400	2	5.7	50	20	11.7
SD 1475		.280 4L STUD (B)	CE	28	10	400	0.9	10.5	50	15	6.4
2N 3733	SD 1075	TO-60	CE	28	10	400	4	4	—	20	7.6
2N 5016	SD 1090	TO-60	CE	28	15	400	4	5.7	50	25	5.8
2N 5637	SD 1244-7	.380 4L STUD	CE	28	20	400	6.9	4.6	60	30	5.8
SD 1462*		.500 6LFL	CE	28	70	225 - 400	8.8	9.0	—	70	0.8
SD 1468*		.500 6LFL	CE	28	70	225 - 400	10	8.4	60 §	75	1.25
SD 1470*		.500 6LFL	CE	28	100	225 - 400	18	7	—	—	0.7
TCC 0105-100*	SD 1464	.400 BAL FL	CE	28	100	100 - 500	17.8	7.5	—	—	0.67
TCC 0204-125*	SD 1463	.400 BAL FL	CE	28	125	225 - 400	25	7	—	—	0.65

* Internally input matched.
§ : Typical value.

SD # is the code used in our invoicing system.

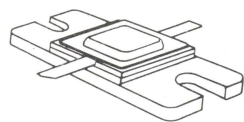
LINEAR TRANSISTORS FOR TV APPLICATIONS, BAND III

Type		Package	Config.	BIAS V ₁ /I ₁ (V) (mA)	P _{out} min (W)	f _o (MHz)	P _{in} (W)	G _p min (dB)	IMD (3 tones) (dB)	C _{22b} max (pF)	R _{th} (j-c) (°C/W)
P/N	SD #										
SD 1455		.500 4L STUD	CE	28/2500	14	225	1.75	9	—55	80	1.5
SD 1458*		.500 6LFL	CE	28/2500	14	225	0.6	14	—53	80	1.5
SD 1459		.550 4L STUD	CE	28/3500	30	225	5.3	7.5	—53	150	1.2
TCC 3100*	SD 1456	.400 BAL FL	CE	28/2 × 100	100	225	10	11	—	80	1.2
SD 1485**		2 x .450 SQ 4LFL	CE	28/2 × 250	200	230	25	11	—	—	0.7

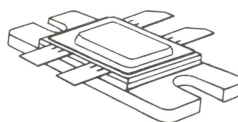
* Internally input matched.
** Class AB.

SD # is the code used in our invoicing system.

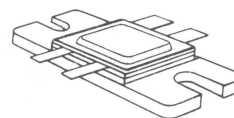
RF & MICROWAVE TRANSISTORS



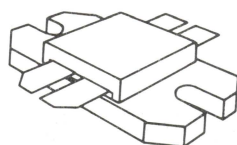
.400 SQ 2LFL HERM



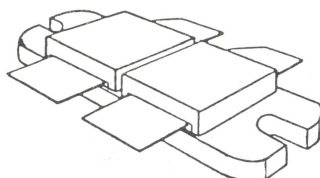
.400 x .500 4LFLB HERM



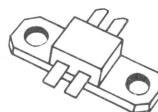
.400 x .425 4LFLB HERM



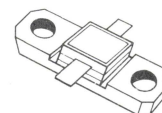
.438 4L BAL FLG



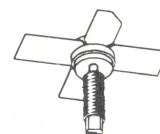
2 x .450 SQ 4LFL



.250 x .320 4LFL



.250 SQ 2LFL HERM



.280 4L STUD (C)

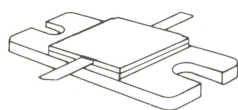
LINEAR TRANSISTORS FOR TV APPLICATIONS, BANDS IV AND V

Type		Package	Config.	BIAS V_1/I_1 (V) (mA)	P_{out} min (W)	f_o (MHz)	P_{in} (W)	$G_{p \min}$ (dB)	IMD (3 tones) (dB)	$C_{22b \max}$ (pF)	$R_{th(j-c)}$ (°C/W)
P/N	SD #										
TCC 598*	SD 1448	.280 4L STUD (C)	CE	25/850	4	860	0.8	7	—58	20	5.5
TDS 595*	SD 1732	.250 x .320 4LFL	CE	25/2 x 900	14	860	1.2	8.5	—47	17.5 §	2.5
SD 1490*	—	.438 4L BAL FLG	CE	28/2 x 1500	25	860	1.9	9.0	—45	30 §	1.3
SD 1489**	—	.438 4L BAL FLG	CE	28/2 x 150	50	860	10.5	6.5	—	40	1.0
SD 1492**	—	2 x .450 SQ 4LFL	CE	28/2 x 500	150	860	30	7.0	—	—	0.55
* Class A ** Class AB.											
§ : Typical value. SD # is the code used in our invoicing system.											

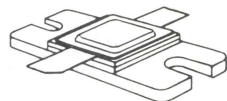
200 ... 500 MHz UHF PULSE POWER TRANSISTORS

Type	Package	Config.	V_{CC} (V)	P_{out} (W)	P_{in} (W)	Frequency range (MHz)	$G_{p \min}$ (dB)	T_p / δ ($\mu s / \%$)
SD 1511-8	.250 SQ 2LFL HERM	CE	28	10	1.2	425	9.2	CW
SD 1474	.400 SQ 2LFL HERM	CE	28	48	10	425	6.8	CW
SD 1563	.400 SQ 2LFL HERM	CB	40	300	30	400-500	9.5	250/10
SD 1564	.400 x .425 4LFLB HERM	CE	40	400	70	400-450	7.5	60/2
SD 1565	.400 x .500 4LFLB HERM	CB	40	500	50	400-500	9.7	250/10

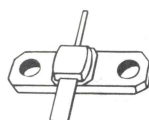
RF & MICROWAVE TRANSISTORS



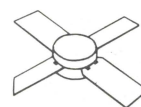
.400 SQ 2LFL



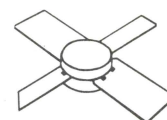
.400 SQ 2WL FL HERM



.250 2LFL HERM



.280 4LSL (A)



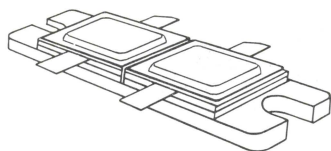
.375 4LSL (A)

960 ... 1220 MHz CLASS C PULSE FOR DME / IFF / TACAN

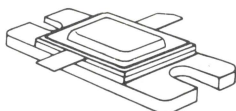
Type	Package	Config.	V _{CC} (V)	P _{out} typ (W)	P _{in} (W)	Frequency range (MHz)	G _p typ (dB)	T _p / δ (μ s / %)
SD 1520-3*	.280 4LSL (A)	CE	28	1 1 min 0.75	0.09 0.100 0.100	1030-1090 1025-1150 960-1215	10.5 10 min 8.8	10/ 1 10/ 1 10/10
SD 1520-8*	.250 2LFL HERM	CE	28	0.10 0.10 min 0.75	0.025 0.025 0.025	1030-1090 1025-1150 960-1215	10.5 10 min 8.8	10/ 1 10/ 1 10/10
SD 1522-9	.250 2LFL HERM	CB	35	1.7 1.5 min 1.2	0.325 0.325 0.325	1030-1090 1025-1150 960-1215	9.3 8.75 min 8	10/ 1 10/ 1 10/10
SD 1522-3	.280 4LSL (A)	CB	35	1.7 1.5 min 1.25	0.200 0.200 0.200	1030-1090 1025-1150 960-1215	9.3 8.75 min 8.0	10/ 1 10/ 1 10/10
SD 1524-1	.280 4LSL (A)	CB	28	3 2.7 min 2.3	0.300 0.280 0.250	1030-1090 1025-1150 960-1215	10 9.8 min 9.6	10/ 1 10/ 1 10/10
SD 1526-1	.280 4LSL (A)	CB	28	6 5 min 4	0.700 0.560 0.500	1030-1090 1025-1150 960-1215	9.3 9.5 min 9	10/ 1 10/ 1 10/10
SD 1527-8	.250 2LFL HERM	CB	50 28 28	5 min 4 4	0.350 0.500 0.640	1030-1090 1030-1090 960-1215	11.5 min 9 8	10/ 1 10/ 1 10/10
SD 1528-6 SD 1528-8	.280 4LSL (A) .250 2LFL HERM	CB	50	20 15 min 12	1.5 1.5 1.5	1030-1090 1025-1150 960-1215	11.2 10 min 9	10/ 1 10/ 1 10/10
SD 1530-1 SD 1530-8	.280 4LSL (A) .250 2LFL HERM	CB	50	40 35 min 25	5.00 4.95 3.50	1030-1090 1025-1150 960-1215	9 8.5 min 8.5	10/ 1 10/ 1 10/10
SD 1534-1 SD 1534-8	.280 4LSL (A) .250 2LFL HERM	CB	50	80 75 min 50	12.7 13.3 10	1030-1090 1025-1150 960-1215	8 7.5 min 7	10/ 1 10/ 1 10/10
SD 1536-3 SD 1536-8	.280 4LSL (A) .250 2LFL HERM	CB	50	100 90 min 80	13 13 13	1030-1090 1025-1150 960-1215	8.9 8.4 min 8.4	10/ 1 10/ 1 10/10
SD 1538-2 SD 1538-8	.400 SQ 2LFL .400 SQ 2WL FL HERM	CB	50	200 150 min 140	30 25 25	1030-1090 1025-1150 960-1215	7.6 7.8 min 7.0	10/ 1 10/ 1 10/10
SD 1540 SD 1540-8	.400 SQ 2LFL .400 SQ 2WL FL HERM	CB	50	350 300 min 290	70 70 70	1030-1090 1025-1150 960-1215	7 6.3 min 6.1	10/ 1 10/ 1 10/10
SD 1540-3	.375 4LSL (A)	CB	50	325 min 280 200	70 70 70	1030-1090 1025-1150 960-1215	6.6 min 6 4.6	10/ 1 10/ 1 10/10
SD 1541	.400 SQ 2LFL	CB	50	450 min 400 min	90 90	1030-1090 1025-1150	7 min 6.5 min	10/ 1 10/ 1

* Class A.

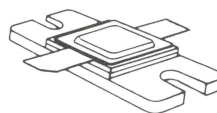
RF & MICROWAVE TRANSISTORS



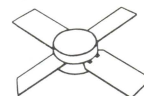
2 x .400 .500 4LFLB HERM



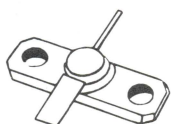
.400 x .500 2LFL HERM



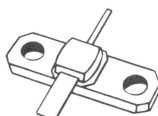
.400 SQ 2WL FL HERM



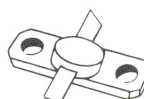
.280 4LSL (A)



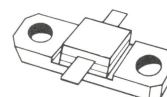
.250 2LFL/FLM



.250 2LFL HERM



.280 2LFL (A)



.250 SQ 2LFL

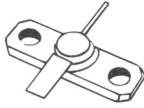
960 ... 1220 MHz CLASS C PULSE FOR DME / IFF / TACAN

Type	Package	Config.	V _{CC} (V)	P _{out} typ (W)	P _{in} (W)	Frequency range (MHz)	G _p typ (dB)	T _p / δ (μ s / %)
SD 1541-1	.400 x .500 2LFL HERM	CB	50	400 min	90	1025-1150	6.5 min	10/ 1
SD 1541-9	.400 x .500 2LFL HERM	CB	50	450 min	90	1030-1090	7 min	10/ 1
SD 1542	.400 x .500 2LFL HERM	CB	50	600 550 min	150 150	1030-1090 1025-1150	6 5.6 min	10/ 1 10/ 1
SD 1542-4	.400 x .500 2LFL HERM	CB	50	600 min	150	1030-1090	6 min	10/ 1
SD 1543-2	2 x .400 .500 4LFLB HERM	CB	50	1000 min	300	1030-1090	6 min	10/ 1
SD 1546-1 SD 1546-2	.280 4LSL (A) .280 2LFL (A)	CB	50	60 min	—	1030-1090	(oscillator)	10/ 1
SD 1512	.250 2LFL	CB	30	5 min	1	960-1220	7 min	400/20
SD 1513	.400 SQ 2WL FL HERM	CB	42	30 min	6.5	960-1220	6.6 min	400/20
SD 1514	.400 SQ 2WL FL HERM	CB	50	100 min	25	960-1220	6 min	400/20
SD 1550	.250 2LFL HERM	CB	35	15 min	1.5	960-1215	10 min	20/10
SD 1550-1	.250 SQ 2LFL	CB	35	15 min	1.5	960-1215	10 min	20/10
SD 1551	.400 SQ 2WL FL HERM	CB	50	80 min	12	960-1215	7.5 min	20/10
SD 1552	.400 x .500 2LFL HERM	CB	50	285 min	64	960-1215	6.5 min	20/10
SD 1556	.400 x .500 2LFL HERM	CB	50	350	62	1090	7.5	(1)
SD 1557	.400 x .500 2LFL HERM	CB	50	250	56	1030	6.5	(2)

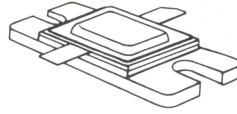
(1) Mode S MARK XV transponder.

(2) Mode S MARK XV interrogator.

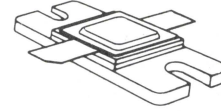
RF & MICROWAVE TRANSISTORS



.230 2L FL
.250 2LFL



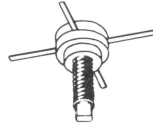
.400 x .500 2LFL HERM



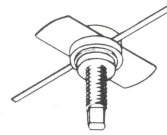
.400 SQ 2WL FL HERM



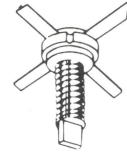
TO 39



TO-117



TO-129



.320 4L STUD HERM

1.2 ... 1.4 GHz CLASS C PULSE FOR RADAR APPLICATIONS

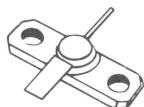
Type	Package	Config.	V _{CC} (V)	P _{out} min (W)	P _{in} (W)	Frequency range (MHz)	G _p min (dB)	T _p / δ (μ s / %)
SD 1500	.250 2LFL	CB	28	5	1.0	1200-1400	7.0	400/20
SD 1501	.400 SQ 2L FL HERM	CB	35	30	6.0	1200-1400	7.0	400/20
SD 1504	.400 SQ 2L FL HERM	CB	45	50	8.3	1200-1400	7.8	300/10
SD 1502	.400 SQ 2L FL HERM	CB	50	100	25	1200-1400	6.0	400/20
SD 1505	.400 x .500 2LFL HERM	CB	50	150	30	1200-1400	7.0	300/10
SD 1507	.400 x .500 2LFL HERM	CB	50	285	65	1200-1400	6.4	150/5

0.50 ... 3.0 GHz MICROWAVE TRANSISTORS FOR CLASS C OPERATION

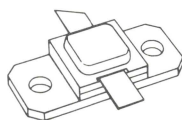
Type		Package	Config.	V _{CC} (V)	P _{out} min (W)	f _o (GHz)	P _{in} (W)	G _p min (dB)	η_c min (%)	C _{22b} max (pF)	R _{th} (j-c) (°C/W)
P/N	SD #										
2N 4428	SD 1175	TO-39	CE	28	0.75	0.5	0.075	5.0	35	3.5	50
2N 4429	SD 1176	TO-117	CE	28	1.0	1.0	0.3	5.0	35	3.5	35
2N 4430	SD 1170	TO-129	CE	28	2.5	1.0	0.75	5.0	35	5.0	17.5
2N 4431	SD 1171	TO-129	CE	28	5.0	1.0	1.57	5.0	35	10.0	9.7
SD 1544		.320 4L STUD HERM	CE	28	1.0	2.0	0.315	5.0	—	2.5	30.2
SD 1545		.320 4L STUD HERM	CE	28	2.5	2.0	0.8	5.0	—	5.0	10.9
TCC 2001	SD 1801	.230 2LFL	CB	28	1.0	2.0	0.2	7.0	35	3.2	25
TCC 2003	SD 1803	.230 2LFL	CB	28	3.0	2.0	0.5	7.8	35	4.0	15
TCC 2005	SD 1805	.230 2LFL	CB	28	5.0	2.0	1.0	7.0	30	8.0	8.5
TCC 2010	SD 1810	.230 2LFL	CB	28	10.0	2.0	1.25	9.0	35	16.0	5.5
TCC 2301	SD 1813	.230 2LFL	CB	22	1.0	2.3	0.1	10	40	3.0	25
TCC 2302	SD 1812	.230 2LFL	CB	20	2.0	2.3	0.25	9.0	40	4.0	20
TCC 2304	SD 1814	.230 2LFL	CB	20	4.0	2.3	0.5	9.0	40	8.0	8.5
TCC 2307	SD 1817	.230 2LFL	CB	22	7.0	2.3	1.1	8.0	35	16.0	4.5
TCC 3000	SD 1830	.230 2LFL	CB	28	0.5	3.0	0.1	7.0	30	3.0	45
TCC 3001	SD 1831	.230 2LFL	CB	28	1.0	3.0	0.2	7.0	35	3.0	35
TCC 3003	SD 1833	.230 2LFL	CB	28	3.0	3.0	0.75	6.0	30	4.0	15
TCC 3005	SD 1835	.230 2LFL	CB	28	5.0	3.0	1.58	5.0	30	8.0	8.5

SD # is the code used in our invoicing system.

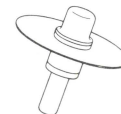
RF & MICROWAVE TRANSISTORS



.230 2L FL



TO 215 AA



.400 MAT FL

2 ... 4 GHz microwave transistors for class A operation

Type		Package	Config.	BIAS V_1/I_1 (V) (mA)	P_{out} (W)	f_o (GHz)	P_{in} (mW)	$G_{p\ min}$ (dB)	$R_{th\ (j-c)}$ (°C/W)
P/N	SD #								
TCC 2100	SD 1851-4	.230 2LFL	CE	20/70	0.316	1	28	10.5	35
TCC 20 L 08	SD 1851	.230 2LFL	CE	20/120	0.8	2	125	8	30
TCC 20 L 15	SD 1853	.230 2LFL	CE	20/220	1.5	2	300	7	17
TCC 20 L 25	SD 1855	.230 2LFL	CE	20/440	2.5	2	625	6	8.5
SD 1850		.230 2LFL	CE	15/80	0.2	2.3	16	11	45

SD # is the code used in our invoicing system.

0.7 ... 2.5 GHz MICROWAVE TRANSISTORS FOR OSCILLATORS

Type	Package	Config.	V_{CC} (V)	P_{out} (W)	Frequency range (GHz)	η_c (%)	I_C (mA)	$R_{th\ (j-c)}$ (°C/W)
SD 1845	.230 2LFL	CC	20	0.5	2.3	25	90	45
SD 1846	.230 2LFL	CC	20	1	2.3	35	180	30
SD 1847	.230 2LFL	CC	24	1.5	2.3	30	250	17
SD 1837	.230 2LFL	CC	20	3	2.3	25	400	—
SD 1838	.230 2LFL	CC	20	3	2.3	30	500	—
SD 1840	TO 215 AA	CE	20	1	2	28	—	25
SD 1842	TO 215 AA	CE	21	1.2	2.3	—	—	—
SD 1843	TO 215 AA	CE	28	1.3	2	—	—	—

1.4 ... 2.7 GHz MATCHED MICROWAVE TRANSISTORS FOR TELECOMMUNICATIONS

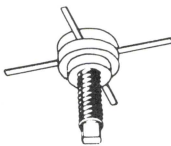
Type		Package	Config.	V_{CC} (V)	P_{out} (W)	Frequency range (GHz)	P_{in} (W)	$G_{p\ min}$ (dB)	$\eta_c\ min$ (%)	$R_{th\ (j-c)}$ (°C/W)
P/N	SD #									
TCC 1417-12	SD 1869	.400 MAT FL	CB	24	12	1.4 ... 1.7	2.0	7.8	40	5.5
TCC 1417-25	SD 1866	.400 MAT FL	CB	24	25	1.4 ... 1.7	4.5	7.5	40	3.0
SD 1868		.400 MAT FL	CB	28	30	1.6 ... 1.65	4.0	8.7	40	5.5
TCC 1720-3	SD 1876	.400 MAT FL	CB	24	3	1.7 ... 2.0	0.4	8.8	40	—
TCC 1720-6	SD 1885	.400 MAT FL	CB	24	6	1.7 ... 2.0	1.0	7.8	45	9.5
TCC 1720-10	SD 1860	.400 MAT FL	CB	24	10	1.7 ... 2.0	2.0	7.0	45	8.0
TCC 1720-13	SD 1883	.400 MAT FL	CB	24	13	1.7 ... 2.0	2.2	7.7	45	4.5
TCC 1720-20	SD 1873	.400 MAT FL	CB	24	20	1.7 ... 2.0	3.5	7.5	40	3.5
TCC 1720-25	SD 1874	.400 MAT FL	CB	24	25	1.7 ... 2.0	4.5	7.4	40	3.0
TCC 1922-18	SD 1872	.400 MAT FL	CB	24	18	1.9 ... 2.2	4.5	6.0	40	3.0
TCC 2023-6	SD 1886	.400 MAT FL	CB	24	6	2.0 ... 2.3	1.0	7.8	40	6.5
TCC 2023-16	SD 1887	.400 MAT FL	CB	24	16	2.0 ... 2.3	4.0	6.0	40	3.0
TCC 2223-3	SD 1879	.400 MAT FL	CB	24	2.8	2.2 ... 2.3	0.4	8.4	40	—
TCC 2223-10	SD 1862	.400 MAT FL	CB	24	10	2.2 ... 2.3	2.0	7.0	40	4.5
TCC 2223-18	SD 1870	.400 MAT FL	CB	24	18	2.2 ... 2.3	4.0	6.5	40	3.0
TCC 2327-15	SD 1875	.400 MAT FL	CB	24	15	2.3 ... 2.7	6.0	4.0	30	3.0

SD # is the code used in our invoicing system.

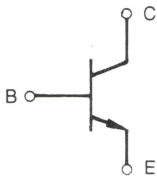
RF & MICROWAVE TRANSISTORS



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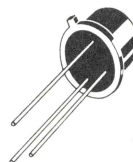
40 ... 900 MHz CLASS A LINEAR FOR CATV/MATV APPLICATIONS

Type			Package	V _(BR) CEO min (V)	f _T @ I _C		C _{12e} C _{22b} * (pF)	NF @ I _C / f			V _{out} @ I _{ND} / CMD		
P/N	SD #				(MHz)	(mA)		(dB)	(mA)	(MHz)	(mV)	(dB)	(dB)
2N 5109	SD 1040-6	N	TO-39	20	1200	50	3.5	3 (1)	10	200			
SD 1006		N	TO-39	30	1500	50	3.5 *	8 (2)	50	216	180	− 57 (3)	− 57 (4)
SD 1316		N	TO-39	20	4000	50	1.5	2	20	200	315	− 51 (3)	− 60 (5)
SD 1005		N	TO-117	30	1500	70	4.0 *	9 (2)	70	216	315	− 50 (3)	− 50 (4)
SD 1317		N	TO-117	20	4000	90	1.2	2.1	40	500			
<div>(1) Narrow band. (2) Broad band. (3) Second order IM : Chan. 2 + Chan. R, IM on Chan. 13 (FCC Channels). (4) NCTA Cross Modulation (12 channels). (5) Cross Modulation : Chan 2-4-5-7-9-11 100 % AM mod., XM on unmod. Chan 13 (FCC channels). SD # is the code used in our invoicing system.</div>													

SMALL SIGNAL TRANSISTORS



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Polar.	Max ratings			Type	Characteristics				Package
	V_{CE0} (V)	I_C (mA)	P_{tot} (mW)		f_T (MHz)	NF (dB)	and P_G (dB)	@ f (MHz)	
NPN	15	25	200	BFY90	1400	4.5	8	800	TO-72
NPN	15	50	200	2N918	900	3.5	22	200	TO-72
NPN	15	50	200	BFX73	900	6	-	60	TO-72
PNP	25	50	225	BFR99A	2300	3.5	8	800	TO-72
NPN	20	200	600	2N3137	750	-	7	250	TO-39
NPN	30	200	800	BFR36	1000	4	16	200	TO-39
NPN	20	400	1000	2N5109	1400	3	14	200	TO-39

SOLID STATE RELAYS

Type	Description	Package
LH1056 LH1061	Optically coupled high voltage solid state AC/DC relay Optically coupled high voltage solid state AC/DC relay	6-LEAD MINIDIP SPECIAL MINIDIP

LOCAL AREA NETWORK

Type	Description	Package
MK5030 MK5032 MK5033 MK5035 MK50351 MK68592	Starlan HUB Local Area Network Controller for Ethernet (LANCE) and Starlan Manchester encoder/decoder Starlan Station Starlan Station compatible with MK5032 Serial Interface Adapter/Manchester encoder/decoder for Ethernet (300 mil)	DIP48 DIP48 DIP28 DIP20 DIP20 DIP24

PACKET SWITCHING

Type	Description	Package
MK5025	X.25 LAPB/ISDN LAPD/HDLC CMOS Hi-speed link level controller with DMA	DIP48, PLCC52

FILTERS

See chapter «ANALOGUE CELLS AND ARRAYS»

DATA PROCESSING

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MEMORIES

NMOS EPROMs

Type	Description	Package
ET2716 / M2716	2K × 8, 450 ns access time, consumption 100/25 mA	DIP24
ET2716-1 / M2716-1	2K × 8, 350 ns access time, consumption 100/25 mA	DIP24
M2732A	4K × 8, 250 ns access time	DIP24
M2732A-2	4K × 8, 200 ns access time, consumption 125 mA	DIP24
M2732A-3	4K × 8, 300 ns access time, consumption 125 mA	DIP24
M2732A-4	4K × 8, 450 ns access time, consumption 125 mA	DIP24
M2764A	8K × 8, 250 ns access time, consumption 75 mA	DIP28
M2764A-2	8K × 8, 200 ns access time, consumption 60 mA	DIP28
M2764A-3	8K × 8, 300 ns access time, consumption 75 mA	DIP28
M2764A-4	8K × 8, 450 ns access time, consumption 75 mA	DIP28
M2764A-20	8K × 8, 200 ns access time, consumption 60 mA	DIP28
M2764A-25	8K × 8, 250 ns access time, consumption 75 mA	DIP28
M2764A-30	8K × 8, 300 ns access time, consumption 75 mA	DIP28
M2764A-45	8K × 8, 450 ns access time, consumption 75 mA	DIP28
M27128A	16K × 8, 250 ns access time, consumption 85 mA	DIP28
M27128A-2	16K × 8, 200 ns access time, consumption 85 mA	DIP28
M27128A-3	16K × 8, 300 ns access time, consumption 85 mA	DIP28
M27128A-4	16K × 8, 450 ns access time, consumption 85 mA	DIP28
M27128A-20	16K × 8, 200 ns access time, consumption 85 mA	DIP28
M27128A-25	16K × 8, 250 ns access time, consumption 85 mA	DIP28
M27128A-30	16K × 8, 300 ns access time, consumption 85 mA	DIP28
M27128A-45	16K × 8, 450 ns access time, consumption 85 mA	DIP28
M27256	32K × 8, 250 ns access time, consumption 100 mA	DIP28
M27256-2	32K × 8, 200 ns access time, consumption 100 mA	DIP28
M27256-3	32K × 8, 300 ns access time, consumption 100 mA	DIP28
M27256-4	32K × 8, 450 ns access time, consumption 100 mA	DIP28
M27256-20	32K × 8, 200 ns access time, consumption 100 mA	DIP28
M27256-25	32K × 8, 250 ns access time, consumption 100 mA	DIP28
M27256-30	32K × 8, 300 ns access time, consumption 100 mA	DIP28
M27256-45	32K × 8, 450 ns access time, consumption 100 mA	DIP28
M27512	64K × 8, 250 ns access time, consumption 125 mA	DIP28
M27512-2	64K × 8, 200 ns access time, consumption 125 mA	DIP28
M27512-3	64K × 8, 300 ns access time, consumption 125 mA	DIP28
M27512-4	64K × 8, 450 ns access time, consumption 125 mA	DIP28
M27512-20	64K × 8, 200 ns access time, consumption 125 mA	DIP28
M27512-25	64K × 8, 250 ns access time, consumption 125 mA	DIP28
M27512-30	64K × 8, 300 ns access time, consumption 125 mA	DIP28
M27512-45	64K × 8, 450 ns access time, consumption 125 mA	DIP28

NMOS ROMs

Type	Description	Package
M2316H	2K × 8, 300 ns access time, consumption 100 mA	DIP24
M2333	4K × 8, 250 ns access time, consumption 100 mA	DIP24
M2365	8K × 8, 250 ns access time, consumption 80 mA	DIP28

CMOS EPROMs

Type	Description	Package
TS27C64A-20	8K × 8, 200 ns access time, consumption 30/1 mA	DIP28
TS27C64A-25	8K × 8, 250 ns access time, consumption 30/1 mA	DIP28
TS27C64A-30	8K × 8, 300 ns access time, consumption 30/1 mA	DIP28
TS27C256-20	32K × 8, 200 ns access time, consumption 30/1 mA	DIP28
TS27C256-25	32K × 8, 250 ns access time, consumption 30/1 mA	DIP28
TS27C256-30	32K × 8, 300 ns access time, consumption 30/1 mA	DIP28

CMOS OTP ROMs

NMOS OTP ROMs

CMOS EEPROMs

NMOS EEPROMs

STATIC RAMs

Type	Description	Package
ETL2147H	4K × 1, 70 ns access time, NMOS FSRAM (Low power)	CERDIP18
ETL2147H-3	4K × 1, 55 ns access time, NMOS FSRAM (Low power)	CERDIP18
ET2147H-1	4K × 1, 35 ns access time, NMOS FSRAM	CERDIP18
ET2147H-2	4K × 1, 45 ns access time, NMOS FSRAM	CERDIP18
ET2147H-3	4K × 1, 55 ns access time, NMOS FSRAM	CERDIP18
MK41H66-20	16K × 1, 20 ns access time, CMOS VFSRAM (Fast \overline{CS})	DIP20
MK41H66-25	16K × 1, 25 ns access time, CMOS VFSRAM (Fast \overline{CS})	DIP20
MK41H66-35	16K × 1, 35 ns access time, CMOS VFSRAM (Fast \overline{CS})	DIP20
MK41H67-20	16K × 1, 20 ns access time, CMOS VFSRAM (\overline{CE} power down)	DIP20
MK41H67-25	16K × 1, 25 ns access time, CMOS VFSRAM (\overline{CE} power down)	DIP20
MK41H67-35	16K × 1, 35 ns access time, CMOS VFSRAM (\overline{CE} power down)	DIP20
MK41H68-20	4K × 4, 20 ns access time, CMOS VFSRAM (\overline{CE} power down)	DIP20
MK41H68-25	4K × 4, 25 ns access time, CMOS VFSRAM (\overline{CE} power down)	DIP20
MK41H68-35	4K × 4, 35 ns access time, CMOS VFSRAM (\overline{CE} power down)	DIP20
MK41H69-20	4K × 4, 20 ns access time, CMOS VFSRAM (Fast \overline{CS})	DIP20
MK41H69-25	4K × 4, 25 ns access time, CMOS VFSRAM (Fast \overline{CS})	DIP20
MK41H69-35	4K × 4, 35 ns access time, CMOS VFSRAM (Fast \overline{CS})	DIP20
MK41H78-25	4K × 4, 25 ns access time, CMOS VFSRAM (\overline{CE} / \overline{OE})	DIP22
MK41H78-35	4K × 4, 35 ns access time, CMOS VFSRAM (\overline{CE} / \overline{OE})	DIP22

MEMORIES

ZEROPOWER™ AND TIMEKEEPER™ SRAMs

(integrated lithium battery for data retention in absence of power - U.L. recognized version available on request)

Type	Description	Package
MK41H79-25	4K × 4, 25 ns access time, CMOS VFSRAM (\overline{CE} / \overline{OE} and flash CLR)	DIP22
MK41H79-35	4K × 4, 35 ns access time, CMOS VFSRAM (\overline{CE} / \overline{OE} and flash CLR)	DIP22
MK41H80-20	4K × 4, 20 ns access time, CMOS VFSRAM (TAGRAM™)	DIP22
MK41H80-22	4K × 4, 22 ns access time, CMOS VFSRAM (TAGRAM™)	DIP22
MK41H80-25	4K × 4, 25 ns access time, CMOS VFSRAM (TAGRAM™)	DIP22
MK41H80-35	4K × 4, 35 ns access time, CMOS VFSRAM (TAGRAM™)	DIP22
MK6116-15	2K × 8, 150 ns access time, CMOS SRAM	DIP24
MK6116-20	2K × 8, 200 ns access time, CMOS SRAM	DIP24
MK6116-25	2K × 8, 250 ns access time, CMOS SRAM	DIP24
MK48T02-12	2K × 8, 120 ns access time, TIMEKEEPER™ SRAM	DIP24
MK48T02-15	2K × 8, 150 ns access time, TIMEKEEPER™ SRAM	DIP24
MK48T02-20	2K × 8, 200 ns access time, TIMEKEEPER™ SRAM	DIP24
MK48T02-25	2K × 8, 250 ns access time, TIMEKEEPER™ SRAM	DIP24
MK48T12-15	2K × 8, 150 ns access time, TIMEKEEPER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48T12-20	2K × 8, 200 ns access time, TIMEKEEPER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48T12-25	2K × 8, 250 ns access time, TIMEKEEPER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48Z02-12*	2K × 8, 120 ns access time, ZEROPOWER™ SRAM	DIP24
MK48Z02-15*	2K × 8, 150 ns access time, ZEROPOWER™ SRAM	DIP24
MK48Z02-20*	2K × 8, 200 ns access time, ZEROPOWER™ SRAM	DIP24
MK48Z02-25*	2K × 8, 250 ns access time, ZEROPOWER™ SRAM	DIP24
MK48Z08-10	8K × 8, 100 ns access time, ZEROPOWER™ SRAM	DIP28
MK48Z08-12	8K × 8, 120 ns access time, ZEROPOWER™ SRAM	DIP28
MK48Z08-15	8K × 8, 150 ns access time, ZEROPOWER™ SRAM	DIP28
MK48Z08-20	8K × 8, 200 ns access time, ZEROPOWER™ SRAM	DIP28
MK48Z09-10	8K × 8, 100 ns access time, ZEROPOWER™ SRAM (power fail int.)	DIP28
MK48Z09-12	8K × 8, 120 ns access time, ZEROPOWER™ SRAM (power fail int.)	DIP28
MK48Z09-15	8K × 8, 150 ns access time, ZEROPOWER™ SRAM (power fail int.)	DIP28
MK48Z09-20	8K × 8, 200 ns access time, ZEROPOWER™ SRAM (power fail int.)	DIP28
MK48Z12-12*	2K × 8, 120 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48Z12-15*	2K × 8, 150 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48Z12-20*	2K × 8, 200 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48Z12-25*	2K × 8, 250 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP24
MK48Z18-10	8K × 8, 100 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP28
MK48Z18-12	8K × 8, 120 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP28
MK48Z18-15	8K × 8, 150 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP28
MK48Z18-20	8K × 8, 200 ns access time, ZEROPOWER™ SRAM ($V_{CC} \pm 10\%$)	DIP28
MK48Z19-10	8K × 8, 100 ns access time, ZEROPOWER™ SRAM (power fail int. - $V_{CC} \pm 10\%$)	DIP28
MK48Z19-12	8K × 8, 120 ns access time, ZEROPOWER™ SRAM (power fail int. - $V_{CC} \pm 10\%$)	DIP28
MK48Z19-15	8K × 8, 150 ns access time, ZEROPOWER™ SRAM (power fail int. - $V_{CC} \pm 10\%$)	DIP28
MK48Z19-20	8K × 8, 200 ns access time, ZEROPOWER™ SRAM (power fail int. - $V_{CC} \pm 10\%$)	DIP28

* Also available with -40 to +85°C temperature range - Ordering information : MKI48Z02-xx, MKI48Z12-xx.

BATTERY BACK-UP SRAMs

Type	Description	Package
MK48C02A-15	2K × 8, 150 ns access time, battery back-up SRAM	DIP28, PLCC 32
MK48C02A-20	2K × 8, 200 ns access time, battery back-up SRAM	DIP28, PLCC 32
MK48C02A-25	2K × 8, 250 ns access time, battery back-up SRAM	DIP28, PLCC 32

BiPORT™ DEVICES

Type	Description	Package
MK4501-65	512 × 9, 65 ns access time, BiPORT™ FIFO	DIP28, PLCC32
MK4501-80	512 × 9, 80 ns access time, BiPORT™ FIFO	DIP28, PLCC32
MK4501-10	512 × 9, 100 ns access time, BiPORT™ FIFO	DIP28, PLCC32
MK4501-12	512 × 9, 120 ns access time, BiPORT™ FIFO	DIP28, PLCC32
MK4501-15	512 × 9, 150 ns access time, BiPORT™ FIFO	DIP28, PLCC32
MK4501-20	512 × 9, 200 ns access time, BiPORT™ FIFO	DIP28, PLCC32

MEMORIES

BiPORT™ DEVICES (Continued)

Type	Description	Package
MK4503-65	2048 × 9, 65 ns access time, BiPORT™ FIFO	DIP28
MK4503-80	2048 × 9, 80 ns access time, BiPORT™ FIFO	DIP28
MK4503-10	2048 × 9, 100 ns access time, BiPORT™ FIFO	DIP28
MK4503-12	2048 × 9, 120 ns access time, BiPORT™ FIFO	DIP28
MK4503-15	2048 × 9, 150 ns access time, BiPORT™ FIFO	DIP28
MK4503-20	2048 × 9, 200 ns access time, BiPORT™ FIFO	DIP28
MK4505M-25	1024 × 5, 15 ns access time, clocked FIFO (MASTER)	DIP24 (300 mil)
MK4505M-33	1024 × 5, 20 ns access time, clocked FIFO (MASTER)	DIP24 (300 mil)
MK4505M-50	1024 × 5, 25 ns access time, clocked FIFO (MASTER)	DIP24 (300 mil)
MK4505S-25	1024 × 5, 15 ns access time, clocked FIFO (SLAVE)	DIP20 (300 mil)
MK4505S-33	1024 × 5, 20 ns access time, clocked FIFO (SLAVE)	DIP20 (300 mil)
MK4505S-50	1024 × 5, 25 ns access time, clocked FIFO (SLAVE)	DIP20 (300 mil)
MK45264N-55	64 × 5 × 2, 55 ns access time bidirectional FIFO	DIP24 (300 mil)
MK45264N-70	64 × 5 × 2, 70 ns access time bidirectional FIFO	DIP24 (300 mil)
MK45265N-55	64 × 5 × 2, 55 ns access time bidirectional FIFO	DIP24 (300 mil)
MK45265N-70	64 × 5 × 2, 70 ns access time bidirectional FIFO	DIP24 (300 mil)

MICROS & PERIPHERALS

4-BIT MICROCONTROLLERS

9400 FAMILY

Type	Description	Package
ET9420/21/22	NMOS 1 K ROM, 15-23 I/O	DIP20, 24, 28 SO20, 24, 28 PLCC28
ETC9410/11/13	CMOS 0,5K ROM, 15-19 I/O	DIP20, 24 SO20, 24
ETC9420/21/22	CMOS 1 K ROM, 15-23 I/O	DIP20, 24, 28 SO20, 24, 28 PLCC28
ETC9444/45	CMOS 2 K ROM, 19-23 I/O	DIP24, 28 SO 24/28 PLCC28
ETL9410/11/13	NMOS Low power 1/2 K ROM, 15-19 I/O	DIP20, 24 SO20, 24
ETL9420/21/22	NMOS low power 1 K ROM, 15-23 I/O	DIP20, 24, 28 SO20, 24, 28 PLCC28
ETL9444/45	NMOS low power, 2 K ROM, 19-23 I/O	DIP24, 28 SO 24/28 PLCC28

8-BIT MICROCONTROLLERS

6804 FAMILY

Type	Description	Package
EF68HC04P3	HCMOS, 2 K ROM, 20 I/O, 8 - bit timer	DIP28, PLCC28
EF6804J2	HMOS, 1 K ROM, 12 I/O, 8 - bit timer	DIP/SO20
EF6804P2	HMOS, 1 K ROM, 20 I/O, 8 - bit timer	DIP28, PLCC28

MICROS & PERIPHERALS

8-BIT MICROCONTROLLERS (Continued)

6805 FAMILY

Type	Description	Package
EF6805P2	HMOS, 1 K ROM, 20 I/O, 8 - bit timer	DIP28, PLCC28
EF6805P6	HMOS, 1.8 K ROM, 20 I/O, 8 - bit timer	DIP28, PLCC28
EF6805R2	HMOS, 2 K ROM, 32 I/O, A/D converter	DIP40, PLCC44
EF6805R3	HMOS, 3.7 K ROM, 32 I/O, A/D converter	DIP40, PLCC44
EF6805U2	HMOS, 2 K ROM, 32 I/O	DIP40, PLCC44
EF6805U3	HMOS, 3.7 K ROM, 32 I/O	DIP40, PLCC44

3870 FAMILY

Type	Description	Package
MK38P70	NMOS, piggy back MCU, up to 64 K external ROM, 32 I/O lines	DIP40, Piggy back
MK2870	NMOS, 1 K ROM MCU, 20 I/O lines	DIP28
MK3870	NMOS, 2 K ROM or 4 K ROM MCU, 32 I/O lines	DIP40
MK3873	NMOS, 2 K ROM MCU, 29 I/O lines, serial I/O	DIP40, Piggy back
MK3875	NMOS, 4 K ROM MCU, 30 I/O lines, stand-by RAM	DIP40
M2870	NMOS, 2 K ROM MCU, 20 I/O lines	DIP28
M2874	NMOS, 4 K ROM MCU, 20 I/O lines	DIP28
M38P74	NMOS, piggy back MCU, 2 K or 4 K external ROM	DIP40, Piggy back
M38P78	NMOS, piggy back MCU, 6 K or 8 K external ROM	DIP40, Piggy back
M3870	NMOS, 2 K ROM MCU, 32 I/O lines	DIP40, PLCC44
M3874	NMOS, 4 K ROM MCU, 32 I/O lines	DIP40, PLCC44
M3876	NMOS, 6 K ROM MCU, 32 I/O lines	DIP40, PLCC44
M3878	NMOS, 8 K ROM MCU, 32 I/O lines	DIP40, PLCC44
M38AD72	NMOS, 2 K ROM MCU, A/D converter, 25 I/O lines	DIP40, PLCC44
M38AD74	NMOS, 4 K ROM MCU, A/D converter, 25 I/O lines	DIP40, PLCC44
M38PAD74	NMOS up to 4 K ROM Piggy back for M38AD7X, 25 I/O lines	DIP40, Piggy back
M38SH74	NMOS, 4 K ROM MCU, 64 bytes N.V. shadow RAM, 31 I/O lines	DIP40, PLCC44
M8911	NMOS 3 K ROM MCU, PLL for TV, 32 bytes NV shadow RAM	DIP28

6801 FAMILY

Type	Description	Package
EF68B01	HMOS, 2 K ROM, 31 I/O, SCI, TIMER, STANDBY RAM, 2 MHz	DIP40, PLCC44
EF68B01U4	HMOS, 4 K ROM, 31 I/O, Enhanced SCI and TIMER, STANDBY RAM, 2 MHz	DIP40, PLCC44
EF6801	HMOS, 2 K ROM, 31 I/O, SCI, TIMER, STANDBY RAM, 1 MHz	DIP40, PLCC44
EF6801-U4	HMOS, 4 K ROM, 31 I/O, Enhanced SCI and TIMER, STANDBY RAM, 1 MHz	DIP40, PLCC44

Z8 FAMILY

Type	Description	Package
Z86E11	NMOS 4 K on chip EPROM MCU	DIP40 Glass Leds
Z86E21	NMOS 4 K on chip EPROM MCU	DIP40 Glass Leds
Z86R81	Z8681 with 240 RAM	DIP40, PLCC44
Z8600	NMOS 2 K ROM MCU with 144 bytes RAM	DIP28
Z8601	NMOS 2 K ROM MCU with 144 bytes RAM	DIP40, PLCC44
Z8610	NMOS 4 K ROM MCU with 144 bytes RAM	DIP28
Z8611	NMOS 4 K ROM MCU with 144 bytes RAM	DIP40, PLCC44
Z8620	NMOS 8 K ROM MCU with 256 bytes RAM	DIP28
Z8621	NMOS 8 K ROM MCU with 256 bytes RAM	DIP40, PLCC44
Z8671	NMOS MCU with BASIC/debug Interpreter	DIP40, PLCC44
Z8681	ROMless MCU with up to 64K extend addressable ROM/RAM	DIP40, PLCC44

MICROS & PERIPHERALS

8-BIT MICROPROCESSORS

6800 FAMILY

Type	Description	Package
EF68A02 EF68A03 EF68A03U4 EF68A09 EF68A09E EF68B02 EF68B03 EF68B09 EF68B09E EF6802 EF6803 EF6803U4 EF6809 EF6809E	NMOS 8 bits MPU with RAM & clock, 1.5 MHz NMOS ROMless MCU, 1.5 MHz 6803 with 192 bits RAM, 1.5 MHz High performance 8-bit MPU, 1.5 MHz 6809 CPU with external clock, 1.5 MHz NMOS 8 bits MPU with RAM & clock, 2 MHz NMOS ROMless MCU, 2 MHz High performance 8-bit MPU, 2 MHz 6809 CPU with external clock, 2 MHz NMOS 8 bits MPU with RAM & clock, 1 MHz NMOS ROMless MCU, 1 MHz 6803 with 192 bits RAM, 1 MHz High performance 8-bit MPU, 1 MHz 6809 CPU with external clock 1 MHz	DIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP/CERDIP40, PLCC44 DIP40, PLCC44

8-BIT PERIPHERALS

6800 FAMILY

Type	Description	Package
EF68A21 EF68A40 EF68A50 EF68A54 EF68B21 EF68B40 EF68B50 EF68B54 EF6821 EF6840 EF6850 EF6854	Peripheral Interface Adapter, 1.5 MHz Programmable Timer, 1.5 MHz Asynchronous Communication Interface Adapter, 1.5 MHz Advanced Data Link Controller, 1.5 MHz Peripheral Interface Adapter, 2 MHz Programmable Timer, 2 MHz Asynchronous Communication Interface Adapter, 2 MHz Advanced Data Link Controller, 2 MHz Peripheral Interface Adapter, 1 MHz Programmable Timer, 1 MHz Asynchronous Communication Interface Adapter, 1 MHz Advanced Data Link Controller, 1 MHz	DIP/CERDIP40, PLCC44 DIP/CERDIP28, PLCC28 DIP/CERDIP24, PLCC28 DIP/CERDIP28, PLCC28 DIP/CERDIP40, PLCC44 DIP/CERDIP28, PLCC28 DIP/CERDIP24, PLCC28 DIP/CERDIP28, PLCC28 DIP/CERDIP40, PLCC44 DIP/CERDIP28, PLCC28 DIP/CERDIP24, PLCC28 DIP/CERDIP28, PLCC28

Z80 FAMILY

Type	Description	Package
MK3801 Z8400 Z8410 Z8420 Z8430 Z8440/1/2/4 Z8470	Serial timer interrupt (STI) Z80 CPU with up to 8 MHz clock frequency Z80 DMA with up to 4 MHz clock frequency Z80 PIO with up to 6 MHz clock frequency Z80 CTC with up to 6 MHz clock frequency Z80 SIO with up to 6 MHz clock frequency Z80 DART with up to 6 MHz clock frequency	DIP40 DIP40, PLCC/LCCC44 DIP40, PLCC/LCCC44 DIP40, PLCC/LCCC44 DIP28, PLCC/LCCC44 DIP40, PLCC/LCCC44 DIP40

Z80 CMOS FAMILY

Type	Description	Package
M8719 Z84C00 Z84C10 Z84C20 Z84C30 Z84C40/1/2/4	Clock generator for micro with up to 16 MHz clock frequency Z80 CMO CPU with up to 8 MHz clock frequency DMA with up to 6 MHz clock frequency PIO with up to 6 MHz clock frequency CTC with up to 6 MHz clock frequency Z80 CMOS SIO with up to 6 MHz clock frequency	DIP16 DIP40, PLCC44 DIP40, PLCC44 DIP40, PLCC44 DIP28, PLCC44 DIP40, PLCC44

MICROS & PERIPHERALS

16-BIT MICROPROCESSORS

68000 FAMILY

Type	Description	Package
TS68000-8 TS68000-10 TS68000-12 TS68000-16 TS68008-8 TS68008-10 TS68008-12	8 MHz clock freq. with 32-bit internal structure 10 MHz clock freq. with 32-bit internal structure 12.5 MHz clock freq. with 32-bit internal structure 16 MHz clock freq. with 32-bit internal structure 8 MHz clock freq. TS68000 8-bit bus version 10 MHz clock freq. TS68000 8-bit bus version 12.5 MHz clock freq. TS68000 8-bit bus version	DIP64, PLCC68, PGA68 DIP64, PLCC68, PGA68 DIP64, PLCC68, PGA68 DIP64, PLCC68, PGA68 DIP48, PLCC52 DIP48, PLCC52 DIP48

Z8000 FAMILY

Type	Description	Package
Z8001 Z8002 Z8010 Z8030 Z8031 Z8036 Z8038 Z8060	16-bit segmented CPU, 8 Mbyte, up to 10 MHz clock frequency 16-bit non segmented CPU, 64 Kbyte, up to 10 MHz clock frequency MMU for Z8001 SEG CPU, up to 10 MHz clock frequency SCC (dual), up to 6 MHz clock frequency ASCC up to 6 MHz clock frequency CIO counter/timer and parallel I/O, up to 6 MHz clock frequency FIFO I/O interface, up to 6 MHz clock frequency FIFO buffer unit (and Z8038 expander), up to 4 MHz clock frequency	DIP48, LCCC52 DIP40, PLCC/LCCC44 DIP48, LCCC52 DIP40, PLCC/LCCC44 DIP40 DIP40, PLCC/LCCC44 DIP40, PLCC/LCCC44 DIP28, LCCC44

16-BIT PERIPHERALS

68000 FAMILY

Type	Description	Package
MK68230 MK68564 MK68901 TS68HC901 TS68483 TS68494 TS68930 TS68931	Parallel interface timer, 8 MHz Serial I/O, 4-5 MHz Multifunction peripheral, 4-5 MHz CMOS multifunction peripheral, 4-5-8 MHz High performance graphic processor - 2048 x 2048 Colour palette : 256/4096 16/32 bit DSP - 6.25 MIPS - 1.2 K x 32 program ROM 16/32 bit DSP - 6.25 MIPS - External ROM (64 K)	DIP48, PLCC52 DIP48, PLCC52 DIP48, PLCC52 DIP48 - PLCC52 DIP64, PLCC68 DIP48, PLCC44 DIP48 LCCC84, PGA84

Z8500 UNIVERSAL PERIPHERALS

Type	Description	Package
Z8530 Z8531 Z8536	SCC (dual), up to 6 MHz clock frequency ASCC, up to 6 MHz clock frequency CIO counter/timer and parallel I/O, up to 6 MHz clock frequency	DIP40, PLCC/LCCC44 DIP40 DIP40, PLCC/LCCC44

8-BIT DEVELOPMENT AND EMULATION

Type	Description
EFT-MUP4 EFT-MUP5 TE-Z8 TST-IN48 Z8E-KIT-BOARD	EF6804P2/J2, EF68HC04P3 emulator EF6805P2/P4/P6, EF6805R2/U2, EF6805R3/U3 emulator Total emulator for Z8 family Hardware development station Programming module for Z8 EPROM MCU's

NEW FAMILIES

ST6 - 8-BIT HCMOS MICROCONTROLLER FAMILY

This new family of HCMOS single-chip microcontrollers is dedicated to the low cost applications. All ST6 devices are based on a building block approach, a common core is surrounded by a combination of dedicated on-chip peripherals (megacells), e.g. : A/D converter, Timers, LCD Drivers, Watchdog function, Operational Amplifiers, PLL, etc. The Program ROM, Data RAM/ROM are of variable sizes to meet different application complexities. The instruction set is designed for byte-efficient program storage and includes bit manipulation and conditional jump instructions.

ST6 HCMOS FAMILY

Type	Description	Package
ST60P1XD6 ST6010B6 ST6011B6 ST6012B6	HCMOS Piggyback MCU (emulation of ST6010/11/12) HCMOS 2K ROM MCU, A/D Converter, 6 I/O Lines HCMOS 2K ROM MCU, A/D Converter, 7 I/O Lines HCMOS 2K ROM MCU, A/D Converter, 7 I/O Lines	PIGGYB-40 PDIP-20 PDIP-20 PDIP-28
ST60P3XD6 ST6031B6 ST6031M6	HCMOS Piggyback MCU (emulation of ST6031) HCMOS 4K ROM MCU, PRE-AMP, Pulse Detector, 16 I/O Lines HCMOS 4K ROM MCU, PRE-AMP, Pulse Detector, 16 I/O Lines	PIGGYB-40 PDIP-28 SO28
ST60R4XC6, ST60R4XK6 ST6040C6 ST6041B6	HCMOS Romless MCU (emulation of ST6040/41) HCMOS 4K ROM MCU, A/D Converter, LCD Drivers, 15 I/O Lines HCMOS 4K ROM MCU, A/D Converter, LCD Drivers, 16 I/O Lines	PLCC84, LCCC84 PLCC44 PDIP-48
ST60R5XC6, ST60R5XK6 ST6050C6 ST6051B6 ST6052B6	HCMOS Romless MCU (emulation of ST6050/51/52) HCMOS 4K ROM MCU, A/D Converter, PRE-AMP, 30 I/O Lines HCMOS 4K ROM MCU, A/D Converter, PRE-AMP, 33 I/O Lines HCMOS 4K ROM MCU, A/D Converter, PRE-AMP, 27 I/O Lines	PLCC84, LCCC84 PLCC44 PDIP-48 PDIP-40
ST61E24K6 ST6124C6	HCMOS EPROM MCU (emulation of ST6124) HCMOS 2.5K ROM MCU, LCD Drivers, Power Supply Supervisor, 16 I/O Lines	LCCC44-W PLCC44
ST61E54K8 ST6154Q8	HCMOS EPROM MCU (emulation of ST6154) HCMOS 3.6K ROM MCU, LCD Drivers, PLL, 16 I/O Lines	LCCC52-W QFP52

ST8 - HIGH SPEED 8-BIT HCMOS MICROCONTROLLER FAMILY

This new family of HCMOS high speed single-chip microcontrollers is aimed at medium-range applications mainly for Telecom, Computer, Consumer and Automotive markets. As in all SGS-THOMSON new HCMOS MCU families, ST8 devices are based on a modular approach, a common powerful and fast core (250 ns machine cycle) is surrounded by a combination of dedicated on-chip peripherals (megacells), e.g. : A/D converter, Timers, Synchronous and Asynchronous serial interfaces, Watchdog function, Pulse width modulation counter, etc. The Program ROM, and Data RAM are of variable sizes to meet different application complexities. EPROM and EEPROM versions are also available. The instruction set is designed for powerful and byte-efficient operation and includes bit manipulation and fast multiply instruction. After those described in the following table many others ST8 devices will come soon.

ST8 HCMOS FAMILY

Type	Description	Package
ST8108C6 ST8108B6 ST81E08L6 ST81E08D6	HCMOS 8K ROM MCU, 176 Bytes RAM, Timer, Synch. & Asynch. Serial Interfaces, 24 I/O lines HCMOS 8K ROM MCU, 176 Bytes RAM, Timer, Synch. & Asynch. Serial Interfaces, 24 I/O lines HCMOS EPROM MCU (emulation of ST8108C6) HCMOS EPROM MCU (emulation of ST8108B6)	PLCC44 PDIP-40 CLCC44-W CDIP-40-W

NEW FAMILIES

ST9 - HIGH SPEED 8/16-BIT HCMOS MICROCOMPUTER FAMILY

ST9 Family components allow you to design application-specific CMOS single chip microcomputers through its flexible architecture. The modular concept is based on a powerful core with megacells expansion.

The core includes an 8/16-bit ALU, a 256-byte register file, a programmable interrupt controller, a multichannel DMA controller and an MSPI and / or I2CBUS serial interface. Megacells like Timers, Serial Interface, I/O Ports, A/D Converter etc. are standard available in a library. They allow on-chip customization through more than 4000 possible combinations of megacells and memory options.

The processor can address as much as 128K bytes of address space. The use of 1.5 μ CMOS Technology allows full compatibility with EPROM and EEPROM memories and the operating with an external clock frequency as high as 24 MHz.

Software tools available are : high level macro assembler, linker/loader, emulator debugger, software simulator and C-compiler.

ST9 devices are particularly tailored to real-time single chip application foreseen for use in Consumer, Industrial, Automotive and Telecom markets.

Type	Description	Package
ST90E20D6	HCMOS high end core, 8K EPROM, 256 reg. file, 1 \times 16-bit watchdog timer, 1 serial communication controller, 1 \times 16 bit multifunction timer, MSPI and I2CBUS serial interface, 40 I/O lines	CDIP-48-W
ST90E23L6	HCMOS high end core, 8K EPROM, 256 reg. file, 1 \times 16-bit watchdog timer, 1 serial communication controller, 1 \times 16 bit multifunction timer, MSPI and I2CBUS serial interface, 36 I/O lines	CLCC44-W
ST90E21D6	HCMOS high end core, 8K EPROM, 256 reg. file, 1 \times 16-bit watchdog timer, 1 serial communication controller, 1 \times 16 bit multifunction timer, MSPI and I2CBUS serial interface, 32 I/O lines	CDIP-40-W
ST9020B6	HCMOS high end core, 8K ROM, 256 reg. file, 1 \times 16-bit watchdog timer, 1 serial communication controller, 1 \times 16 bit multifunction timer, MSPI and I2CBUS serial interface, 40 I/O lines	PDIP-48
ST9023C6	HCMOS high end core, 8K ROM, 256 reg. file, 1 \times 16-bit watchdog timer, 1 serial communication controller, 1 \times 16 bit multifunction timer, MSPI and I2CBUS serial interface, 36 I/O lines	PLCC44
ST9021B6	HCMOS high end core, 8K ROM, 256 reg. file, 1 \times 16-bit watchdog timer, 1 serial communication controller, 1 \times 16 bit multifunction timer, MSPI and I2CBUS serial interface, 32 I/O lines	PDIP-40
ST90E30L6	HCMOS high end core, 8K EPROM, 256 reg. file, 1 \times 16-bit watchdog timer, MSPI and I2CBUS serial interface, 1 serial communication controller, 2 \times 16 bit multifunction timers, 8 channels by 8 bit analog to digital converter, 56 I/O lines	CLCC68-W
ST90E31D6	HCMOS high end core, 8K EPROM, 256 reg. file, 1 \times 16-bit watchdog timer, MSPI and I2CBUS serial interface, 1 serial communication controller, 2 \times 16 bit multifunction timers, 6 channels by 8 bit analog to digital converter, 40 I/O lines	CDIP-48-W
ST9030C6	HCMOS high end core, 8K ROM, 256 reg. file, 1 \times 16-bit watchdog timer, MSPI and I2CBUS serial interface, 1 serial communication controller, 2 \times 16 bit multifunction timers, 8 channels by 8 bit analog to digital converter, 56 I/O lines	PLCC68
ST9031B6	HCMOS high end core, 8K ROM, 256 reg. file, 1 \times 16-bit watchdog timer, MSPI and I2CBUS serial interface, 1 serial communication controller, 2 \times 16 bit multifunction timers, 6 channels by 8 bit analog to digital converter, 40 I/O lines	PDIP-48

DISPLAY CIRCUITS AND GRAPHIC PROCESSORS

Type	Description	Package
EF9345 EF9367 EF9369 TS68483 TS68494 TS9370	Single chip alphanumeric and semigraphic display processor Graphic display processor - 512 × 1024 Colour palette : 16/4096 High performance graphic processor - 2048 × 2048 Colour palette : 256/4096 Same as EF9369 with linear law	DIP40, PLCC44 DIP40 DIP28, PLCC28 DIP64, PLCC68 DIP48, PLCC44 DIP28, PLCC28

DATA COMMUNICATION CIRCUITS

LOCAL AREA NETWORKS

Type	Description	Package
MK5030 MK5032 MK5033 MK5035 MK50351 MK68592	StarLAN HUB Local Area Network Controller for Ethernet (LANCE) and Starlan Manchester encoder/decoder StarLAN Station Starlan station compatible with MK 5032 Serial Interface Adapter/Manchester encoder/decoder for Ethernet (300 mil)	DIP48 DIP48 DIP28 DIP20 DIP20 DIP24

PACKET SWITCHING

Type	Description	Package
MK5025	X.25 LAPB / ISDN LAPD / HDLC CMOS Hi-speed link level controller with DMA	DIP48, PLCC52

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HIGH SPEED DATA CONVERSION

Type	Description	Package
TS8318	8-bit flash ADC, 20 MHz sampling rate	DIP 24
TS8348	8-bit flash ADC (min. version of TS8318), 20 MHz sampling rate	DIP 20
TS8408	8-bit voltage output DAC, 25 MHz sampling rate	DIP 16
TS8428	8-bit voltage output DAC, 5 MHz sampling rate	DIP 16
UA. 1005	4-bit flash ADC, 30 MHz sampling rate	DIP 24

TV, MONITORS AND VCR CIRCUITS

DEFLECTION - ICs VERTICAL DEFLECTION

Type	Description	Package
TDA1170D	Complete system for VDU and B & W TV	DIP 16
TDA1170N	Complete system for VDU, B & W and colour TV	FINDIP
TDA1170S	Complete system for VDU, B & W and colour TV	FINDIP
TDA1670A	Complete system for VDU and colour TV	MULTIWATT15
TDA1770A	Complete system for VDU and B & W TV	DIP20
TDA1872A	Complete system for AUTO 50/60 Hz	MULTIWATT15
TDA2170	Power output for colour TV	MULTIWATT11
TDA2270	Power output for B & W TV	DIP16
TDA8170	Power output for colour TV	HEPTAWATT
TDA8172	Power output for colour TV	HEPTAWATT
TDA8173	Power output for B & W TV	DIP16
TDA8175	Power output for colour TV	HEPTAWATT

EAST/WEST CORRECTION

Type	Description	Package
TDA4950	E/W parabolic and keystone correction	MINIDIP
TDA8145	E/W parabolic for square CRT	MINIDIP
TEA2031A	E/W parabolic and Keystone correction	MINIDIP

HORIZONTAL DRIVERS

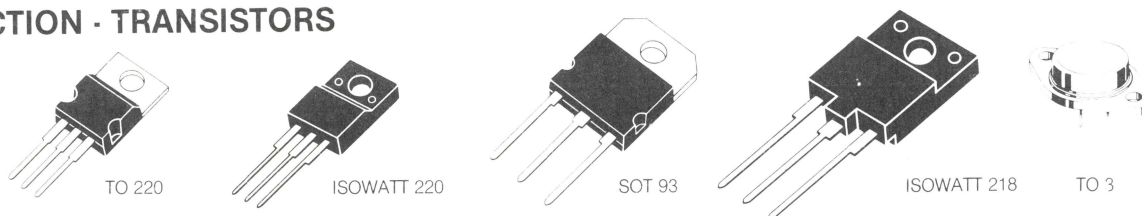
Type	Description	Package
TDA8140	Deflection power transistor driver	POWER DIP8 + 8
TDA8143	Deflection power transistor driver	SIP9

H/V DEFLECTION SIGNAL PROCESSOR

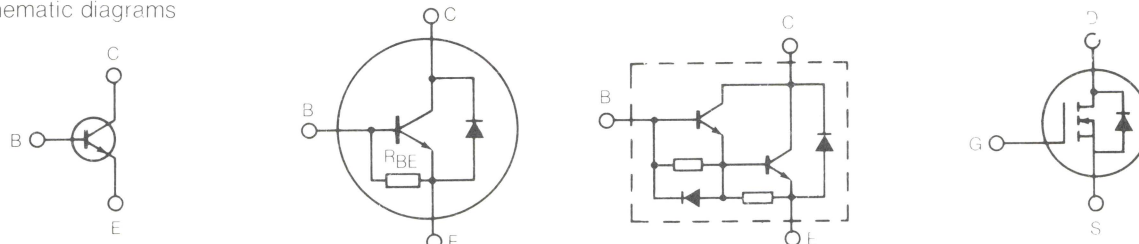
Type	Description	Package
TDA1180P	Horizontal processor for monitors, colour + B & W TV	DIP16
TDA2593	Horizontal processor for colour TV	DIP16
TDA8100	Complete deflection for low cost monitors + B & W TV	BATWING DIP 20
TDA 8181	H/V processor for colour TV	DIP 20
TDA 8185	H/V processor for colour TV	DIP 24
TEA2017	H/V deflection for colour monitors + B & W TV	MULTIWATT15
TEA2028B	Deflection + SMPS processor	DIP28
TEA2029C	Deflection + SMPS processor	DIP 28
TEA2037A	H/V Deflection circuit for low cost monitors, B & W TV	BATWING DIP16

TV, MONITORS AND VCR CIRCUITS

DEFLECTION - TRANSISTORS



Internal schematic diagrams



HIGH DEFINITION COLOUR MONITORS HORIZONTAL DEFLECTION

These NPN transistors feature very fast switching times typically 3 to 5 times faster than 1500 V products designed several years ago.

I_C (A)	V_{CES} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type	$V_{CE(sat)}$ @ I_C (A)		
						(V)	$h_{FE} = 5$	$h_{FE} = 7$
4.00	1200	600	70	TO 220	SGSF 324	1.50	1.75	1.25
4.00	1200	600	45	ISOWATT 218	SGSIF 424	1.50	1.75	1.25
4.00	1200	600	35	ISOWATT 220	SGSIF 324	1.50	1.75	1.25
4.00	1200	600	80	SOT 93	SGSF 424	1.50	1.75	1.25
4.00	1300	600	45	ISOWATT 218	SGSIF 425	1.50	1.25	1.00
4.00	1300	600	80	SOT 93	SGSF 425	1.50	1.25	1.00
7.00	1200	600	85	TO 220	SGSF 344	1.50	3.50	2.50
7.00	1200	600	35	ISOWATT 220	SGSIF 344	1.50	3.50	2.50
7.00	1200	600	95	SOT 93	SGSF 444	1.50	3.50	2.50
7.00	1300	600	55	ISOWATT 218	SGSIF 445	1.50	3.00	2.00
7.00	1300	600	95	SOT 93	SGSF 445	1.50	3.00	2.00
10.00	1200	600	65	ISOWATT 218	SGSIF 464	1.50	6.00	3.50
10.00	1200	600	150	TO 3	SGSF 564	1.50	6.00	3.50
10.00	1200	600	125	SOT 93	SGSF 464	1.50	6.00	3.50
10.00	1300	600	65	ISOWATT 218	SGSIF 465	1.50	5.00	3.00
10.00	1300	600	150	TO 3	SGSF 565	1.50	5.00	3.00
10.00	1300	600	125	SOT 93	SGSF 465	1.50	5.00	3.00
20.00	1200	600	250	TO 3	SGSF 664	1.50	12.00	7.00
20.00	1300	600	250	TO 3	SGSF 665	1.50	10.00	6.00

The ISOWATT 218 isolated power package gives a simple solution to device mounting problems. It offers one hole mounting, may be easily paralleled and with 2500 V AC isolation and long creepage distances makes it easy to achieve the standards required by VDE, UL, IEC etc. The power dissipation is equivalent to a non isolated SOT 93 (TO 218) device mounted with external electrical isolation.

COLOUR TV HORIZONTAL DEFLECTION

I_C (A)	V_{CBO} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type	$V_{CE(sat)}$ @ I_C		
						(V)	(A)	(A)
2.5	1500	600	45	ISOWATT 218	2SD 1429 FI	8	2	0.6
3.5	1500	600	55	ISOWATT 218	2SD 1430 FI	8	3	0.8
4	1500	700	—	SOT 93	2SD 1441	1	3	1
5	1500	600	60	ISOWATT 218	2SD 1431 FI	5	4	0.8
5	1500	700	—	SOT 93	2SD 1730	8	4	1
5	1500	700	—	SOT 93	2SD 1455	5	4.5	1.2
5	1500	700	50	ISOWATT 218	2SD 1577 FI	2	4.5	2
6	1500	600	60	ISOWATT 218	2SD 1432 FI	5	5	1
6	1500	700	—	SOT 93	2ST 3460	2	3	0.6
7	1500	700	60	ISOWATT 218	2ST 2000 FI	1	4	2
7.5	1500	700	—	SOT 93	2ST 2000	1	4	2
7.5	1500	700	60	ISOWATT 218	S 2000 FI	5	4.5	2
8	1500	700	50	ISOWATT 218	BU 508 FI	5	4.5	2
8	1500	700	50	ISOWATT 218	BU 508 AFI	1	4.5	2
8	1500	700	50	ISOWATT 218	BU 508 DFI*	1	4.5	2
8	1500	700	125	SOT 93	BU 508	5	4.5	2
8	1500	700	125	SOT 93	BU 508A	1	4.5	2
8	1500	700	125	SOT 93	BU 508D*	1	4.5	2
8	1500	700	150	TO 3	BU 208	5	4.5	2
8	1500	700	150	TO 3	BU 208A	1	4.5	2
8	1500	700	150	TO 3	BU 208D*	1	4.5	2

* Transistors with integral damper diode.

TV, MONITORS AND VCR CIRCUITS

BIPOLAR POWER TRANSISTORS AND DARLINGTONS FOR MONOCHROME DEFLECTION

I_C	V_{CBO}	V_{CEO}	P_{tot}	Package	Type NPN	h_{FE} @ min	I_C	V_{CE}	$V_{CE(sat)}$ max	I_C	I_B
(A)	(V)	(V)	(W)				(A)	(V)	(V)	(A)	(A)
6	800	375	110	SOT 93	BU 326 P	5	2.5	1.5	1.5	2.5	0.5
6	800	375	114	SOT 93	BU 426	5	2.5	1.5	1.5	2.5	0.5
6	900	400	110	SOT 93	BU 326 AP	5	2.5	1.5	1.5	2.5	0.5
6	900	400	114	SOT 93	BU 426 A	5	2.5	1.5	1.5	2.5	0.5
7	330	150	60	TO 220	BU 407	10	5	1	1	5	0.5
7	330	150	60	TO 220	BU 407 D*	8	5	1	1	5	0.65
7	400	150	50	TO 220	BU 104 P	7	7	2	2	7	1
7	400	150	50	TO 220	BU 104 DP*	7	7	2	2	7	1
7	400	200	60	TO 220	BU 406	10	5	1	1	5	0.5
7	400	200	60	TO 220	BU 406 D*	8	5	1	1	5	0.5
7	400	200	60	TO 220	BU 408	10	5	1	1	6	1.2
7	400	200	60	TO 220	BU 408 D*	8	5	1	1	6	1.2
7	600	400	75	TO 220	BU 810**	100	2	2	2.5	4	0.2
8	330	150	60	TO 220	BU 807**	100	5	2	1.5	5	0.05
8	400	200	60	TO 220	BU 806**	100	5	2	1.5	5	0.05
10	330	120	50	TO 220	BU 109 P	7	7	2	2	7	1
10	330	120	50	TO 220	BU 109 DP*	7	7	2	2	7	1

* Transistors with integral damper diode.

** Fast switching monolithic Darlington's with integral speed up and damper diodes.

POWER MOS TRANSISTORS

$V_{(BR)DSS}$	$R_{DS(on)}$ @ max	I_D	Package	Type	I_D max	P_{tot}	g_{fs} min	C_{iss} max
(V)	(Ω)	(A)			(A)	(W)	(mho)	(pF)
400	1	3	TO 220	IRF 730	5.5	74	2.9	800
400	0.55	5.2	TO 218	IRF 740	10	125	4	1600
400	0.55	5	TO 218	SGSP 475	10	150	6	2100
400	0.8	8	ISOWATT 218	IRFP 350 FI	10	70	8	3000
450	1.5	2.5	TO 220	SGSP 364	5	100	3	1000
450	0.7	4.5	TO 218	SGSP 474	9	150	6	2100
500	4	1.2	TO 220	BUZ 74 A	2	40	0.8	500
500	3.8	1.4	TO 220	SGSP 319	2.8	75	0.8	380
500	3	1.2	TO 220	BUZ 74	2.4	40	0.8	500
500	3	1.4	TO 220	IRF 820	2.5	50	1	400
500	3	1.4	ISOWATT 220	IRF 820 FI	2	30	1	400
500	2	2.5	TO 220	BUZ 42	4	75	1.5	2000
500	1.5	2.5	TO 220	BUZ 41 A	4.5	75	1.5	2000
500	1.5	2.5	TO 220	IRF 830	4.5	74	2.7	800
500	1.5	2.5	ISOWATT 220	IRF 830 FI	3	35	2.7	800
500	1.5	2.5	TO 220	SGSP 369	5	100	3	1000
600	0.85	4.4	TO 220	IRF 840	8	125	4.9	1600
500	0.85	4.4	ISOWATT 220	IRF 840 FI	4.5	40	4.9	1600
500	0.8	5.5	TO 218	BUZ 354	8	125	2.7	4900
500	0.8	5	TO 3	BUZ 45 A	8.3	125	2.7	4900
500	0.7	4.5	TO 218	SGSP 479	9	150	5	1900
500	0.6	5.5	TO 218	BUZ 353	9.5	125	2.7	4900
500	0.6	5	TO 3	BUZ 45	9.6	125	2.7	4900
500	0.4	7.9	TO 218	IRFP 450	14	180	9.3	3000
500	0.4	7.9	ISOWATT 218	IRFP 450 FI	9	70	9.3	3000
600	2.5	1.5	TO 220	MTP3N60	3	75	—	1000
600	2.5	1.5	ISOWATT 220	MTP3N60 FI	2.5	35	1.5	1000
600	1.2	3	ISOWATT 218	MTH6N60 FI	3.5	40	3	1800
600	1.2	3	TO 220	MTP6N60	6	125	2	1800
800	2	2	TO 218	STHV 82	5.5	125	2	1000
1000	3.5	2	TO 218	STHV 102	4.2	125	2	1200

TV, MONITORS AND VCR CIRCUITS

CHROMA

CHROMA VIDEO CIRCUIT

Type	Description	Package
TDA3562A	Complete PAL-NTSC decoder	DIP28
TEA5031D	Video processor for low cost multistandard TV sets	DIP28
TEA5040	Wide band video processor	DIP40
TEA5620	Complete PAL decoding system	DIP18
TEA5630	Complete SECAM decoding system	DIP24
TEA5640C	Complete PAL / SECAM / NTSC - 1 & 2 decoding system	DIP28
TEA5640B	Complete PAL / SECAM decoding system	DIP28

RGB HIGH VOLTAGE OUTPUT STAGE

Type	Description	Package
TDA8153	Low cost, direct drive of RGB cathodes	MULTIWATT 15
TEA5101A	RGB high voltage video amplifier	MULTIWATT 15

VIDEO IF CIRCUITS

Type	Description	Package
TDA2540	Video IF system with AFC-for NPN tuner	DIP16
TDA2541	Video IF system with AFC-for PNP tuner	DIP16
TDA2542	Video IF system with AFC-french standard	DIP16
TDA4426	Video IF system with very stable IF amplifier-AFC for PNP tuner	DJP18
TDA4427	Video IF system with very stable IF amplifier-inverted AFC	DIP18
TDA4443	Multistd video IF system with AGC capabilities	DIP16
TDA4445A	Multistd sound IF system with quasi parallel sound processing	DIP16
TDA4445B	Same as TDA 4445A with AM demodulator	DIP16
TDA8120	Multistd video IF system with multistd. AGC + QSS + STD L sound detector	DIP24

SOUND CHANNELS

Type	Description	Package
TDA1190Z	IF amplifier-FM detector-AF preamp. and out. stage	FINDIP
TDA3190	IF amplifier-FM detector-AF preamp. and out. stage	DIP16
TDA4190A	TV sound IF - DC control	16 + 2 + 2
TDA8190	Complete channel with DC controls	16 + 2 + 2

AUDIO AMPLIFIERS

Type	Description	Package
TCA830SM	2W low cost	MINIDIP
TDA1904	4W low cost	POWERDIP8 + 8
TDA1905	5W with muting	POWERDIP8 + 8
TDA1910	10W with muting	MULTIWATT11
TDA2006	12W with muting	PENTAWATT
TDA2007	6 + 6W stereo	SIP9
TDA2009/A	10 + 10W stereo	MULTIWATT11
TDA2030	14W HI FI	PENTAWATT
TDA2030/A	18W HI FI	PENTAWATT
TDA2040	20W HI FI	PENTAWATT
TDA7250	60W HI FI dual audio driver	DIP20
TEA2025B	1 + 1W stereo	BATWING DIP16

TV, MONITORS AND VCR CIRCUITS

VIDEO AND SOUND SWITCHES

Type	Description	Package
TDA8196 TEA1014 TEA2014A TEA5114A TEA5115 TEA5116	Audio switch with DC volume control Video and sound switch for monosound TV sets Video switch for low cost solution 3 channels switching (R.G.B.) 5 switches for video and RGB selection 5 switches for video and RGB selection	MINIDIP DIP14 MINIDIP DIP16 DIP18 DIP18

REMOTE CONTROL

Type	Description	Package
M105 M145026B7 M145027B7 M145028B7 M3004B1 M3005B1 M708B1 M708AB1 M708LB1 M709B1 M709AB1 M710B1 M710AB1 TDA8160 TDA8162 TEA5049 UAA4000,S UAA4009	PCM receiver RC encoder RC decoder RC decoder RC Transmitter 64 commands RC Transmitter 64 commands CMDS (use with TEA 5049) PCM transmitter 30 commands PCM transmitter 30 commands PCM transmitter 30 commands PCM transmitter 40 commands PCM transmitter 40 commands PCM transmitter 64 commands PCM transmitter 64 commands Flash mode infrared receiver Flash and carrier infrared receiver PCM 400 kHz word recognition PCM transmitter PCM receiver-12 channels - 1 analog control - MUTE (use with UAA4000)	DIP24 DIP16 DIP16 DIP16 DIP20 DIP20 DIP20 DIP20 DIP20 DIP24 DIP24 DIP28 DIP28 MINIDIP DIP14 DIP14 DIP18 DIP18

VOLTAGE SYNTHESIS TUNING SYSTEMS

Type	Description	Package
M293 M490BB1 M491BB1 M494B1 TDA4433	EPM for 32 stations Voltage synthesis tuning Voltage synthesis tuning Voltage tuning with μ P interface Identification circuit	DIP28 DIP40 DIP40 DIP40 DIP14

FREQUENCY SYNTHESIS TUNING SYSTEMS

Type	Description	Package
M206 M28SB74 M38SB74 M38SB78	PLL TV μ P interface to use with M708-709-710 4K/8K ROM μ P microcomputer with serial bus 4K/8K ROM μ P microcomputer with serial bus 4K/8K ROM μ P microcomputer with serial bus	DIP28 DIP28 DIP40 DIP40

VIDEO RECORDER CIRCUITS

Type	Description	Package
M8716B1 TDA8114A TDA8115 TDA8116 TEA5701	Clock calendar with serial I2C bus VCR processor interface Dual motor driver μ P converter - tachometer Video head amplifier	DIP8 DIP20 HEPTAWATT DIP16 SO20

TV, MONITORS AND VCR CIRCUITS

SWITCH MODE POWER SUPPLY

BIPOLAR TRANSISTORS

I_C (A)	V_{CEV} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type NPN	h_{FE} @ min	I_C / V_{CE} (A) (V)	$V_{CE(sat)}$ max (V)	I_C / I_B (A) (A)
5	1500	700	60	ISOWATT 218	2ST 3485 FI			5	4 1
6	1200	600	—	SOT 93	2ST 3642			5	4 0.8
7	1500	700	60	ISOWATT 218	2ST 2000 FI			1	4 2
7.5	1500	700	—	SOT 93	2ST 2000			1	4 2
7.5	1500	700	60	ISOWATT 218	S 2000 FI			5	4.5 2
12	1200	600	—	SOT 93	2ST 3552			2	6 1.2

INTEGRATED CIRCUITS

Type	Description	Package
TDA4601/B TEA2018A TEA2019 TEA2164 TEA5170	Free running frequency controller Current mode PWM controller Current mode PWM controller with PLL sync. Master-slave : primary switching circuit Master-slave : secondary controller	SIP9, DIP18 DIP8 DIP14 BATWING DIP16 DIP 8

DISPLAY CIRCUITS

GRAPHIC PROCESSORS

Type	Description	Package
EF9345 EF9367 EF9369 TS68483 TS68494 TS9370	Single chip alphanumeric and semigraphic display processor Graphic display processor - 512 × 1024 Colour palette : 16/4096 High performance graphic processor - 2048 × 2048 Colour palette : 256/4096 Same as EF9369 with linear law	DIP40, PLCC44 DIP40 DIP28, PLCC28 DIP64, PLCC68 DIP48, PLCC44 DIP28, PLCC28

LED DISPLAY DRIVERS

Type	Description	Package
M5450B7 M5451B7 M5480B7 M5481B7 M5482B7 M5486B7 TDA4092	34 outputs/15mA sync + enable 35 outputs/15mA sync 3.5 digit (23 segments) TTL10 2 digit (14 segments) TTL10 2 digit (15 segments) TTL10 33 outputs/15mA sync Decoder driver 2 digit - 7 segments	DIP40 DIP40 DIP28 DIP28 DIP20 DIP20 DIP24

VOLTAGE REGULATORS

Type	Description	Package
TDA8134 TDA8135 TDA8136 TEA5110 TEA7105 TEA7605SP TEA7610SP TEA7685SP	Dual 5V + 12V regulator with disable Dual voltage regulator with disable Dual 12V regulator with disable 5V (DUAL) - 0.1A 5V - 100mA - Watch dog - Reset Low drop-out - 5V - 500mA - Load dump protection 10V regulator 8.5V regulator	HEPTAWATT HEPTAWATT HEPTAWATT BATWING DIP16 BATWING DIP16 TO220 TO220 TO220

RADIO AND AUDIO

AUDIO AMPLIFIERS FOR CAR RADIO

Type	Description	Package
TDA2002	8W amplifier	PENTAWATT
TDA2003	10W amplifier	PENTAWATT
TDA2004	10 + 10W amplifier	MULTIWATT 11
TDA2005	20W bridge amplifier	MULTIWATT 11
TDA7240A	20W bridge amplifier	HEPTAWATT
TDA7241	20W bridge amplifier	HEPTAWATT
TDA7256	22W bridge amplifier	MULTIWATT 11
TDA7260	PWM audio driver (25W)	DIP20
TDA7350	22W bridge / stereo amplifier	MULTIWATT 11
TDA7360	2 × 12W amplifier with clipping detector	MULTIWATT 11

Hi-Fi POWER AMPLIFIERS

Type	Description	Package
TDA2030	14W amplifier (4Ω)	PENTAWATT
TDA2030A	18W amplifier (4Ω) - 12W amplifier (8Ω) - 32W with 2 devices in bridge config.	PENTAWATT
TDA2040	22W amplifier (4Ω)	PENTAWATT
TDA7250	15 to 80W stereo drivers	DIP20

GENERAL PURPOSE AUDIO AMPLIFIERS

Type	Description	Package
TBA820M	1W amplifier	MINIDIP
TDA1904	4W amplifier (4Ω)	POWERDIP (8 + 8)
TDA1905	6W amplifier (4Ω) with muting	POWERDIP (8 + 8)
TDA1908	8W amplifier (8Ω)	FINDIP
TDA1910	10W amplifier (8Ω)	MULTIWATT 11
TDA2006	12W amplifier (4Ω)	PENTAWATT
TDA2007	6 + 6W amplifier (4Ω)	SIP9
TDA2008	10W amplifier (4Ω)	PENTAWATT
TDA2009/A	10 + 10W amplifier (4Ω)	MULTIWATT 11
TDA2822	3.5W bridge amplifier (1.8 + 1.8W stereo)	DIP16
TDA2822M	1 + 1W amplifier, low voltage	MINIDIP
TDA2824S	1.8 + 1.8W stereo amplifier (low SVR)	SIP9
TDA7231	1.6W amplifier, low voltage	MINIDIP (4 + 4)
TDA7233	1W amplifier with mute, low voltage	MINIDIP

AUDIO-PREAMPLIFIERS AND AUDIO PROCESSORS

Type	Description	Package
LM1837	Dual low - noise preamplifier with autoreverse	DIP16
TDA2320A	Stereo preamplifier	MINIDIP
TDA3410	Dual low - noise preamplifier with autoreverse	DIP16
TDA3420	Dual low - noise preamplifier	DIP16
TDA7232	Preamplifier/compressor	DIP20
TDA7282	Stereo preamplifier (low voltage)	MINIDIP
TDA7300	Digital controlled stereo audio processor	DIP28
TDA7302	Digital controlled stereo audio processor	DIP28

RADIO AND AUDIO

MOTOR REGULATORS

Type	Description	Package
L272	Dual power op. amp.	8 + 8
L272M	Dual power op. amp.	MINIDIP
L2720	Low drop dual power op. amp.	8 + 8
L2722	Low drop dual power op. amp.	MINIDIP
L2724	Low drop dual power op. amp.	SIP9
L2726	Low drop dual power op. amp.	SO20
TDA1151	0.4A speed regulator	SOT32
TDA1154	DC motor speed regulator	MINIDIP
TDA7270S	Multifunction system for tape players	POWERDIP (8 + 8)
TDA7272	1A autoreverse speed regulator	DIP20
TDA7274	Low voltage speed regulator	MINIDIP
TDA7275A	1.5A Motor speed regulator	4 + 4
TDA7276	1A Motor speed regulator	4 + 4

MUSIC

Type	Description	Package
M082/A	Tone generator	DIP16
M083/A	Tone generator	DIP16
M086/A	Tone generator	DIP16
M108/208	Single chip organ	DIP40
M112	Polyphonic sound generator	DIP40
M114S/A	Digital sound generator	DIP40, DIP48

RADIO CIRCUITS

Type	Description	Package
M145026	RC encoder	DIP16
M145027	RC decoder	DIP16
M145028	RC decoder	DIP16
M8438A	32 segment static LCD driver	DIP40, PLCC44
M8439	32 segment static LCD driver	DIP40
TCA3089	FM-IF radio system	DIP16
TCA3189	FM-IF high quality radio system	DIP16
TDA1220B	AM-FM receiver	DIP16
TDA1220L	AM-FM receiver	DIP16
TDA2220	AM-FM radio	DIP20
TDA7211A	3V-FM tuner	MINIDIP
TDA7220	AM-FM receiver	DIP16
TDA7230A	Stereo decoder and headphone amplifier	DIP16
TDA7320	AM-FM car radio system	DIP20
TDA7322	AM-FM car radio system	DIP20
TDA7325	PLL radio tuning synthesizer	DIP18
TDA7359	Narrow band FM-IF demodulator for cordless	DIP18
TDA7361	Narrow band FM-IF demodulator for cordless	DIP16
TEA1330	Stereo decoder	DIP16

RADIO AND AUDIO

MEMORIES CMOS EEPROMs

Type	Description	Package
ST24C02 TS59C11 TS93C46	256 × 8, clock frequency 100 kHz, I2C compatible 128 × 8, clock frequency 250 kHz, consumption 3/0.1 mA 64 × 16, clock frequency 250 kHz, consumption 3/0.1 mA	DIP8, SO8 DIP8 DIP8

NMOS EEPROMs

Type	Description	Package
M9306 M9346	16 × 16, clock frequency 250 kHz 64 × 16, clock frequency 250 kHz	DIP8, SO8 DIP8, SO8

CMOS OTP ROMs - NMOS OTP ROMs

See chapter «DATA PROCESSING»

LAMP BALLAST

Our Multiepitaxial Mesa devices offer cost effective devices for fluorescent electronic lamp ballasts. The FASTSWITCH technology offers easier driving and faster switching. For use in applications such as transportation or emergency lighting running from low voltage DC the power transistors for DC-DC converters will be suitable.

BIPOLAR POWER TRANSISTORS

I _C (A)	V _{CB0} (V)	V _{CEO} (V)	P _{tot} (W)	Package	Type	V _{CE(sat)} @ (V)	I _C / (A)	I _B (mA)	t _s (μs)	t _f (μs)
4	700	400	75	TO 220	MJE 13005	1	4	1000	4	0.9
5	850	400	70	TO 220	SGSF 321 (1)	1.5	3.5	700	2.5	0.3
5	850	400	70	TO 220	BUV 46	1.5	2.5	300	3	0.8
7	400	200	60	TO 220	BU 406	1	5	500	0.9 §	0.3 §
8	700	400	80	TO 220	MJE 13007	1.5	5	1000	3	0.7
10	850	400	85	TO 220	SGSF 341	1.5	6	1200	2.5	0.3

(1) FASTSWITCH technology.

§ : Typical value.

AUTOMOTIVE

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INTEGRATED CIRCUITS

IGNITION CONTROL

Type	Description	Package
L482 L484 L497 L530	Controller (hall effect pickup) Controller (magnetic pickup) Controller (hall effect pickup) μ P interface (hall/magnetic)	DIP16 DIP16 DIP16 DIP16

FUEL INJECTION CONTROL

Type	Description	Package
L584 L9335 L9336	Injector driver Solenoid driver Solenoid driver	DIP16 PENTAWATT PENTAWATT

ALTERNATOR REGULATORS

Type	Description	Package
L585 L9480VB	Voltage regulator One chip regulator	DIP16 TO220

POWER ACTUATORS

Type	Description	Package
L9222 L9305/7/9 L9306/8 L9324 L9350 L9801	Quad transistor switch Dual 1A power actuators Dual 0.3A power actuators Window lift controller Power driver Multipower BCD high side driver	DIP16 DIP16 MINIDIP DIP20 PENTAWATT PENTAWATT

SPECIAL FUNCTIONS

Type	Description	Package
L4620 L9610/11 L9686	Liquid level alarm PWM power-MOS controller Direction indicator driver	MINIDIP SO16/DIP16 MINIDIP

INTEGRATED CIRCUITS

VOLTAGE REGULATORS

Type	Description	Package
LM2930A	5V - 0.4A	TO220
LM2931A	5V - 0.4A	TO220
L26XX	5/8.5/10V - 0.5A	TO220
L387A	5V - 0.5A - with reset	PENTAWATT
L47XX	5/8.5/10V - 0.5A	TO220
L48XX	5/8.5/10/12V - 0.5A	TO220
L4920	Variable - 0.4A	PENTAWATT
L4921	Variable - 0.4A	MINIDIP
L4922	5V - 1A	HEPTAWATT
L4923	5V - 1A	PENTAWATT
L4926	Multifunction voltage regulator	MULTIWATT11
L4945	5V - 0.5A	TO220
L4947	5V - 0.5A - with reset	PENTAWATT

OPERATIONAL AMPLIFIERS

Type	Description	Package
LM2902D	Quad - Low power - Single power supply	SO14
LM2902DT	Quad - Low power - Single power supply	SO14 tape
LM2902N	Quad - Low power - Single power supply	DIP14
LM2904D	Dual - Low power - Single power supply	SO8
LM2904DT	Dual - Low power - Single power supply	SO8 tape
LM2904N	Dual - Low power - Single power supply	DIP8

COMPARATORS

Type	Description	Package
LM2901D	Quad - Low power - Low offset voltage	SO14
LM2901DT	Quad - Low power - Low offset voltage	SO14 tape
LM2901N	Quad - Low power - Low offset voltage	DIP14
LM2903D	Dual - Low power - Low offset voltage	SO8
LM2903DT	Dual - Low power - Low offset voltage	SO8 tape
LM2903N	Dual - Low power - Low offset voltage	DIP8

MEMORIES

CMOS EEPROMs

Type	Description	Package
ST24C02	256 × 8, clock frequency 100 kHz, I ² C compatible	DIP8, SO8
TS59C11	128 × 8, clock frequency 250 kHz, consumption 3/0.1 mA	DIP8
TS93C46	64 × 16, clock frequency 250 kHz, consumption 3/0.1 mA	DIP8

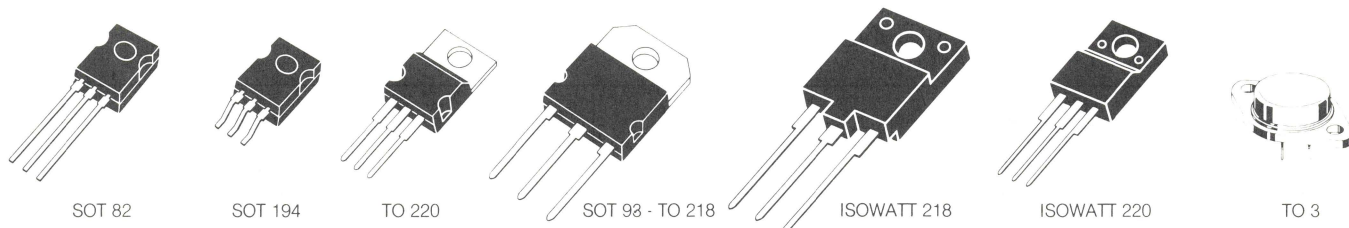
NMOS EEPROMs

Type	Description	Package
M9306	16 × 16, clock frequency 250 kHz	DIP8, SO8
M9346	64 × 16, clock frequency 250 kHz	DIP8, SO8

CMOS OTP ROMs - NMOS OTP ROMs

See chapter «DATA PROCESSING»

POWER TRANSISTORS

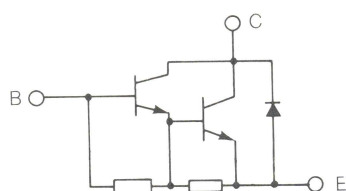


ELECTRONIC IGNITION DARLINGTONS

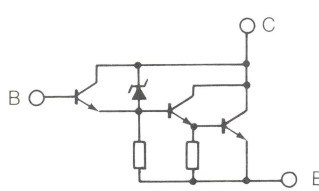
I_C (A)	V_{CBO} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type NPN	h_{FE} min	I_C @ (A)	V_{CE} (V)	V_{CEsat} @ (V)	I_C / (A)	I_B (mA)
6	450	400	60	SOT 82	SGS 911	20	4	1.8	1.8	2.5	50
6	450	400	60	TO 220	BU 911	20	4	1.8	1.8	2.5	50
6	500	450	60	SOT 82	SGS 912	20	4	1.8	1.8	2.0	50
6	500	450	60	TO 220	BU 912	20	4	1.8	1.8	2.0	50
8	650	400	70	TO 220	SGSD 00020** (1)	7000	1	5.0	4.0	3.0	3
10	450	400	40	ISOWATT 220	BU 921 TFI	50	7	1.8	1.8	5.0	50
10	450	400	60	ISOWATT 218	BU 921 PFI	50	7	1.8	1.8	5.0	50
10	450	400	105	TO 220	BU 921 T	50	7	1.8	1.8	5.0	50
10	450	400	105	SOT 93	BU 921 P	50	7	1.8	1.8	5.0	50
10	450	400	125	TO 3	BU 921	50	7	1.8	1.8	5.0	50
10	500	450	60	ISOWATT 218	BU 922 PFI	50	7	1.8	1.8	5.0	50
10	500	450	105	TO 220	BU 922 T	50	7	1.8	1.8	5.0	50
10	500	450	105	SOT 93	BU 922 P	50	7	1.8	1.8	5.0	50
10	500	450	125	TO 3	BU 922	50	7	1.8	1.8	5.0	50
15	350*	350	60	ISOWATT 218	BU 931 ZPFI (2)	100	7	1.6	1.8	8	100
15	350*	350	150	SOT 93	BU 931 ZP (2)	100	7	1.6	1.8	8	100
15	350*	350	175	TO 3	BU 931 Z (2)	100	7	1.6	1.8	8	100
15	450	400	60	ISOWATT 218	BU 931 RPFI	40	10	1.8	1.8	8	100
15	450	400	105	SOT 93	BU 931 RP	40	10	1.8	1.8	8	100
15	450	400	175	TO 3	BU 931 R	40	10	1.8	1.8	8	100
15	500	450	60	ISOWATT 218	BU 932 RPFI	40	10	1.8	1.8	8	100
15	500	450	105	SOT 93	BU 932 RP	53	8	1.8	1.8	8	150
15	500	450	175	TO 3	BU 932 R	53	8	1.8	1.8	8	150

* $V_{CBO} = V_{CEO}$ due to the action of the integrated zener clamp.
** TRILINTON device.

Internal schematic diagrams



(1)



(2)

POWER TRANSISTORS

HIGH GAIN BIPOLAR DARLINGTONS

I _C (A)	V _{CB0} (V)	V _{CEO} (V)	P _{tot} (W)	Package	Type		h _{FE} min	@ I _C / V _{CE} (A) (V)	V _{CEsat} (V)	@ I _C / I _B (A) (mA)	
					NPN	PNP					
2	60	60	50	SOT 82 (1)	SGS 110	SGS 115	1000	1 4	2.5	2 8	
2	80	80	50	SOT 82 (1)	SGS 111	SGS 116	1000	1 4	2.5	2 8	
2	100	100	50	SOT 82 (1)	SGS 112	SGS 117	1000	1 4	2.5	2 8	
5	60	60	65	SOT 82 (1)	SGS 120	SGS 125	1000	3 3	2	3 12	
5	80	80	65	SOT 82 (1)	SGS 121	SGS 126	1000	3 3	2	3 12	
5	100	100	65	SOT 82 (1)	SGS 122	SGS 127	1000	3 3	2	3 12	
6	60	60	60	SOT 82 (1)	BD 331	BB 332	750	3 3	2	3 12	
6	80	80	60	SOT 82 (1)	BD 333	BD 334	750	3 3	2	3 12	
6	100	100	60	SOT 82 (1)	BD 335	BD 336	750	3 3	2	3 12	
8	40	40	65	SOT 82 (1)	SGS 6386		1000	3 3	2	3 6	
8	60	60	65	SOT 82 (1)	SGS 130	SGS 135	1000	4 4	2	4 16	
8	80	80	60	TO 220	BDX 53 B	BDX 54 B	750	3 3	2	3 12	
8	80	80	65	SOT 82 (1)	SGS 131	SGS 136	1000	4 4	2	4 16	
8	80	80	70	TO 220	TIP 131	TIP 136	1000	4 4	2	4 16	
8	80	80	80	TO 220	TIP 101	TIP 106	1000	3 4	2	3 16	
8	100	100	60	TO 220	BDX 53 C	BDX 54 C	750	3 3	2	3 12	
8	100	100	65	SOT 82 (1)	SGS 132	SGS 137	1000	4 4	2	4 16	
8	100	100	70	TO 220	TIP 132	TIP 137	1000	4 4	2	4 16	
8	100	100	80	TO 220	TIP 102	TIP 107	1000	3 4	2	3 6	
10	60	60	65	SOT 82	SGS 6387		1000	5 3	2	5 10	
10	60	60	65	TO 220	2N 6387		1000	5 3	2	5 10	
10	80	80	65	SOT 82	SGS 6388		1000	5 3	2	5 10	
10	80	80	65	TO 220	2N 6388		1000	5 3	2	5 10	
10	80	80	125	SOT 93	TIP 141	TIP 146	1000	5 4	3	10 40	
10	100	100	125	SOT 93	TIP 142	TIP 147	1000	5 4	3	10 40	
12	80	80	80	TO 220	BDW 93 B	BDW 94 B	750	5 3	2	5 20	
12	100	100	80	TO 220	BDW 93 C	BDW 94 C	750	5 3	2	5 20	
12	160	140	80	TO 220	SGSD 93E		1000	3 3	2	10 20	
12	180	160	80	TO 220	SGSD 93F		1000	3 3	2	10 20	
12	200	180	80	TO 220	SGSD 93G		1000	3 3	2	10 20	
20	80	80	160	TO 3	2N 6283	2N 6286	750	10 3	3	20 200	
25	80	80	130	SOT 93	SGSD 100	SGSD 200	300	20 3	1.75	10 400	
30	60	60	200	TO 3	MJ 11012	MJ 11011	1000	20 5	4	30 300	
30	90	90	200	TO 3	MJ 11014	MJ 11013	1000	20 5	4	30 300	

(1) Also available in SOT 194 package for SMD.

MOSFET TRANSISTORS FOR AUTOMOTIVE APPLICATIONS

V _(BR) DSS (V)	R _{DS} (on) max (Ω)	@ I _D (A)	Package	Type	I _D max (A)	P _{tot} (W)	g _{fs} min (mho)	C _{iss} max (pF)
50	0.13	5	SOT 194	SGSP222*	10	50	3	550
50	0.10	9	TO 220	BUZ71	14	40	3	650
50	0.10	9	ISOWATT 220	BUZ71 F I	12	30	3	650
50	0.08	13	TO 220	BUZ10	20	70	8	700 §
50	0.04	15	TO 220	BUZ11	30	75	4	2000
50	0.04	15	ISOWATT 220	BUZ11 F I	20	35	4	2000
50	0.033	20	TO 218	SGSP492	40	150	10	2800
60	0.15	6	TO 220	MTP3055A	12	40	4.5	500
60	0.15	6	ISOWATT 220	MTP3055A F I	10	30	4.5	500
60	0.08	22	TO 218	IRFP153	34	150	13	3000
60	0.08	22	ISOWATT 218	IRFP153 F I	21	65	13	3000
60	0.055	22	TO 218	IRFP151	40	150	13	3000
60	0.055	22	ISOWATT 218	IRFP151 F I	26	65	13	3000
60	0.04	15	TO 220	BUZ11S2	30	75	4	2000
60	0.04	15	ISOWATT 220	BUZ11S2 F I	20	35	4	2000
60	0.028	20	TO 218	MTH40N06	40	150	10	5000
60	0.028	20	ISOWATT 218	MTH40N06 F I	26	65	10	5000

§ : Typical value.

NOTE : For internal schematic diagrams see following page.

(1) Also available in SOT 194 package for SMD.

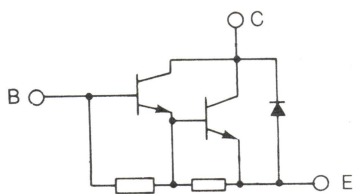
POWER TRANSISTORS

MOSFET TRANSISTORS FOR AUTOMOTIVE APPLICATIONS (Continued)

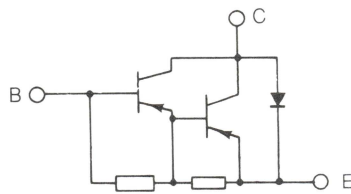
$V_{(BR) DSS}$ (V)	$R_{DS(on)}$ max (Ω)	@ I_D (A)	Package	Type	I_D max (A)	P_{tot} (W)	g_{fs} min (mho)	C_{iss} max (pF)
80	0.36	5.6	TO 220	IRF523	8	60	2.7	600
80	0.36	5.6	ISOWATT 220	IRF523FI	6	30	2.7	600
80	0.27	5.6	TO 220	IRF521	9.2	60	2.7	600
80	0.27	5.6	ISOWATT 220	IRF521FI	7	30	2.7	600
80	0.23	8.3	TO 220	IRF533	12	79	5.1	800
80	0.23	8.3	ISOWATT 220	IRF533FI	8	35	5.1	800
80	0.16	8.3	TO 220	IRF531	14	79	5.1	800
80	0.16	8.3	ISOWATT 220	IRF531FI	9	35	5.1	800
80	0.10	17	TO 220	IRF543	25	125	8.7	1600
80	0.10	17	ISOWATT 220	IRF543FI	14	40	8.7	1600
80	0.077	17	TO 220	IRF541	28	125	8.7	1600
80	0.077	17	ISOWATT 220	IRF541FI	15	40	8.7	1600
100	1.40	1.2	SOT 82	SGSP201*	2	18	0.5	125
100	0.36	5.6	TO 220	IRF522	8	60	2.7	600
100	0.36	5.6	ISOWATT 220	IRF522FI	6	30	2.7	600
100	0.27	5.6	TO 220	IRF520	9	60	2.7	600
100	0.27	5.6	ISOWATT 220	IRF520FI	7	30	2.7	600
100	0.25	5	TO 220	BUZ72A	9	40	2.7	600
100	0.23	8.3	TO 220	IRF532	12	79	5.1	800
100	0.23	8.3	ISOWATT 220	IRF532FI	8	35	5.1	800
100	0.16	8.3	TO 220	IRF530	14	79	5.1	800
100	0.16	8.3	ISOWATT 220	IRF530FI	9	35	5.1	800
100	0.15	9	TO 220	SGSP361	18	100	4.5	1200
100	0.15	10	TO 218	SGSP461	20	125	4.5	1200
100	0.10	17	TO 220	IRF542	25	125	8.7	1600
100	0.10	17	ISOWATT 220	IRF542FI	14	40	8.7	1600
100	0.08	22	TO 218	IRFP152	34	150	13	3000
100	0.08	22	ISOWATT 218	IRFP152FI	21	65	13	3000
100	0.077	17	TO 220	IRF540	28	125	8.7	1600
100	0.077	17	ISOWATT 220	IRF540FI	15	40	8.7	1600
100	0.055	22	TO 218	IRFP150	40	150	13	3000
100	0.055	22	ISOWATT 218	IRFP150FI	26	65	13	3000

* Also available in SOT 194 package for SMD.

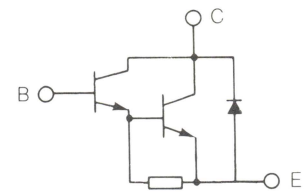
Internal schematic diagrams



NPN



PNP



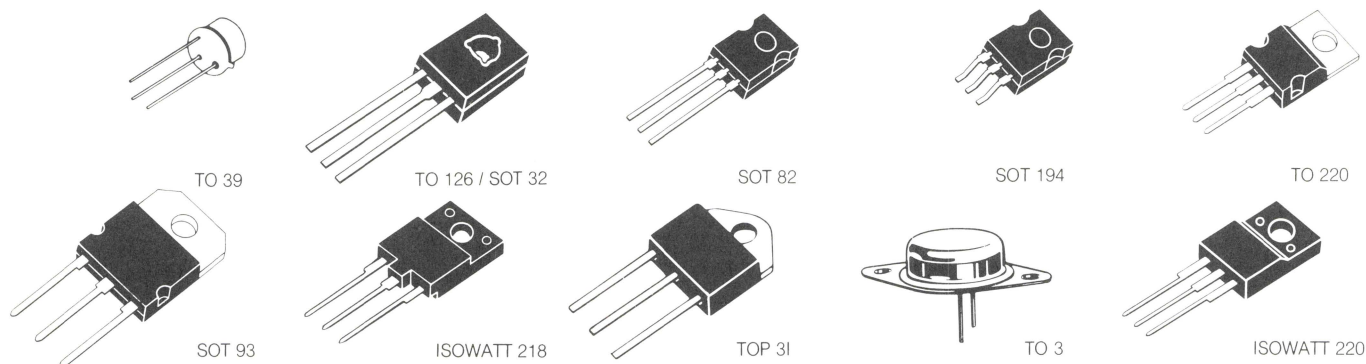
For SGSD 93E / 93F / 93G only

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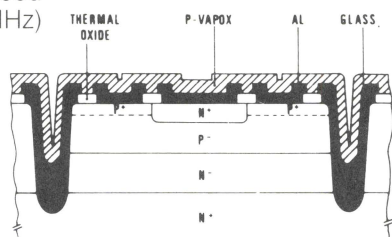
POWER BIPOLAR



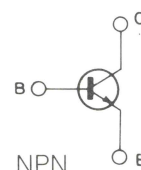
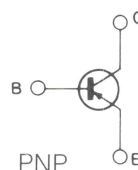
EPITAXIAL BASE TRANSISTORS

Epitaxial base - I_{CM} : 1 \rightarrow 3 A, V_{CEO} : 22 \rightarrow 100 V

NPN and PNP types (perfect complementary pairs)
 Medium V_{CEO} range (22 to 100 V)
 Medium switching speed
 Medium f_T (2 to 20 MHz)
 High ruggedness



Internal schematic diagrams



I_C (A)	V_{CBO} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type		h_{FE} @ I_C / V_{CE} min			V_{CEsat} @ I_C / I_B		
					NPN	PNP		(A)	(V)	(V)	(A)	(mA)
1	40	40	30	TO 126	2N 4921	2N 4918	30	0.5	1	0.6	1	100
1	40	40	30	TO 220	TIP 29	TIP 30	15	1	4	0.7	1	125
1	60	60	30	TO 126	2N 4922	2N 4919	30	0.5	1	0.6	1	100
1	60	60	30	TO 220	TIP 29 A	TIP 30 A	15	1	4	0.7	1	125
1	80	80	30	TO 126	2N 4923	2N 4920	30	0.5	1	0.6	1	100
1	80	80	30	TO 220	TIP 29 B	TIP 30 B	15	1	4	0.7	1	125
1	100	100	30	TO 220	TIP 29 C	TIP 30 C	15	1	4	0.7	1	125
2	45	45	25	TO 126	BD 233	BD 234	25	1	2	0.6	1	100
2	55	45	30	TO 220	BD 239	BD 240	15	1	4	0.7	1	200
2	60	60	25	TO 126	BD 235	BD 236	25	1	2	0.6	1	100
2	70	60	30	TO 220	BD 239 A	BD 240 A	15	1	4	0.7	1	200
2	90	80	30	TO 220	BD 239 B	BD 240 B	15	1	4	0.7	1	200
2	100	80	25	TO 126	BD 237	BD 238	25	1	2	0.6	1	100
2	115	100	30	TO 220	BD 239 C	BD 240 C	15	1	4	0.7	1	200
3	30	30	25	TO 126	MJE 520	MJE 370	25	1	1	—	—	—
3	40	40	40	TO 220	TIP 31	TIP 32	25	1	4	1.2	3	375
3	45	45	30	TO 126	BD 175	BD 176	40	0.15	2	0.8	1	100
3	45	45	30	TO 126	BD 175-10	BD 176-10	63	0.15	2	0.8	1	100
3	45	45	30	TO 126	BD 175-16	BD 176-16	100	0.15	2	0.8	1	100
3	45	45	30	TO 126	BD 175-6	BD 176-6	40	0.15	2	0.8	1	100
3	55	45	40	TO 220	BD 241	BD 242	25	1	4	1.2	3	600
3	60	60	30	TO 126	BD 177	BD 178	40	0.15	2	0.8	1	100
3	60	60	30	TO 126	BD 177-10	BD 178-10	63	0.15	2	0.8	1	100
3	60	60	30	TO 126	BD 177-6	BD 178-6	40	0.15	2	0.8	1	100
3	60	60	40	TO 220	TIP 31 A	TIP 32 A	25	1	4	1.2	3	375
3	70	60	40	TO 220	BD 241 A	BD 242 A	25	1	4	1.2	3	600
3	80	80	30	TO 126	BD 179	BD 180	40	0.15	2	0.8	1	100
3	80	80	30	TO 126	BD 179-10	BD 180-10	63	0.15	2	0.8	1	100

POWER BIPOLAR

EPITAXIAL BASE TRANSISTORS (Continued)

I _C (A)	V _{CB0} (V)	V _{CEO} (V)	P _{tot} (W)	Package	Type		h _{FE} @ I _C / V _{CE}			V _{CEsat} @ I _C / I _B		
					NPN	PNP	min	(A)	(V)	(V)	(A)	(mA)
3	80	80	30	TO 126	BD 179-6	BD 180-6	40	0.15	2	0.8	1	100
3	80	80	40	TO 220	TIP 31 B	TIP 32 B	25	1	4	1.2	3	375
3	90	80	40	TO 220	BD 241 B	BD 242 B	25	1	4	1.2	3	600
3	100	100	40	TO 220	TIP 31 C	TIP 32 C	25	1	4	1.2	3	375
3	115	100	40	TO 220	BD 241 C	BD 242 C	25	1	4	1.2	3	600
4	22	22	36	TO 126	BD 433	BD 434	50	2	1	0.5	2	200
4	32	32	36	TO 126	BD 435	BD 436	50	2	1	0.5	2	200
4	40	40	40	TO 126	MJE 521	MJE 371	40	1	1	—	—	—
4	40	40	40	TO 126	2N 5190	2N 5193	25	1.5	2	0.6	1.5	150
4	45	45	36	TO 126	BD 437	BD 438	40	2	1	0.6	2	200
4	45	45	40	TO 220	2N 6121	2N 6124	25	1	2	0.6	1.5	150
4	60	60	36	TO 126	BD 439	BD 440	25	2	1	0.8	2	200
4	60	60	40	TO 126	2N 5191	2N 5194	25	1.5	2	0.6	1.5	150
4	60	60	40	TO 220	2N 6122	2N 6125	25	1.5	2	0.6	1.5	150
4	80	80	36	TO 126	BD 441	BD 442	15	2	1	0.8	2	200
4	80	80	40	TO 126	2N 5192	2N 5195	20	1.5	2	0.6	1.5	150
4	80	80	40	TO 220	2N 6123	2N 6126	20	1.5	2	0.6	1.5	150
5	40	25	15	TO 126	MJE 200	MJE 210	70	0.5	1	0.3	0.5	50
6	40	40	65	TO 220	TIP 41	TIP 42	15	3	4	1.5	6	600
6	45	45	65	TO 220	BD 243	BD 244	15	3	4	1.5	6	1000
6	60	60	65	TO 220	BD 243 A	BD 244 A	15	3	4	1.5	6	1000
6	60	60	65	TO 220	TIP 41 A	TIP 42 A	15	3	4	1.5	6	600
6	80	80	65	TO 220	BD 243 B	BD 244 B	15	3	4	1.5	6	1000
6	80	80	65	TO 220	TIP 41 B	TIP 42 B	15	3	4	1.5	6	600
6	100	100	65	TO 220	BD 243 C	BD 244 C	15	3	4	1.5	6	1000
6	100	100	65	TO 220	TIP 41 C	TIP 42 C	15	3	4	1.5	6	600
7	40	30	40	TO 220	2N 6288	2N 6111	30	4	3	1	3	300
7	60	50	40	TO 220	2N 6290	2N 6109	30	4	2.5	1	2.5	250
7	80	70	40	TO 220	2N 6292	2N 6107	30	4	2	1	2	200
8	45	45	50	TO 220	BD 533	BD 534	25	2	2	0.8	2	200
8	60	60	50	TO 220	BD 535	BD 536	25	2	2	0.8	2	200
8	80	80	50	TO 220	BD 537	BD 538	15	2	2	0.8	2	200
10	60	60	150	TO 3	2N 5877	2N 5875	20	4	4	1	5	500
10	70	60	75	TO 220	MJE 3055T	MJE 2955T	20	4	4	1.1	4	400
10	80	60	150	TO 3	2N 3715	2N 3791	30	3	2	0.8	5	500
10	80	80	150	TO 3	2N 5878	2N 5876	20	4	4	1	5	500
10	100	80	150	TO 3	2N 3716	2N 3792	30	3	2	0.8	5	500
12	45	45	75	TO 220	BD 705	BD 706	20	4	4	1	4	400
12	60	60	75	TO 220	BD 707	BD 708	15	4	4	1	4	400
12	80	80	75	TO 220	BD 709	BD 710	15	4	4	1	4	400
12	100	100	75	TO 220	BD 711	BD 712	15	4	4	1	4	400
15	50	40	150	TO 3	2N 3771	BD 906	15	15	4	1.4	10	1000
15	45	45	90	TO 220	BD 905	BD 907	15	5	4	1	5	500
15	45	45	125	TO 3	BDW 51	BDW 52	20	5	4	1	5	500
15	50	50	75	TO 220	2N 6486	2N 6489	20	5	4	1.3	5	500
15	60	60	100	TO 220	BD 907	BD 908	15	5	4	1	5	500
15	60	60	125	TO 3	BDW 51 A	BDW 52 A	20	5	4	1	5	500
15	70	60	90	SOT 93	TIP 3055	TIP 2955	20	4	4	1.1	4	400
15	100	60	115	TO 3	2N 3055	MJ 2955	20	4	4	1.1	4	400
15	100	60	150	TO 3	2N 3772		15	10	4	2	15	1500
15	100	60	150	TO 3	SGS 3055		20	4	4	1	5	500
15	70	70	75	TO 220	2N 6487	2N 6490	20	5	4	1.3	5	500
15	80	80	90	TO 220	BD 909	BD 910	15	5	4	1	5	500
15	80	80	125	TO 3	BDW 51 B	BDW 52 B	20	5	4	1	5	500
15	90	90	75	TO 220	2N 6488	2N 6491	20	5	4	1.3	5	500
15	100	100	90	TO 220	BD 911	BD 912	15	5	4	1	5	500
15	100	100	125	TO 3	BDW 51 C	BDW 52 C	20	5	4	1	5	500
16	100	100	200	TO 3	2N 5629	2N 6029	25	8	2	1	10	1000
20	80	80	200	TO 3	2N 5303	2N 5745	40	1	2	1	10	1000
25	60	60	125	SOT 93	TIP 35 A	TIP 36 A	25	1.5	4	1.8	15	1500
25	60	60	200	TO 3	2N 5885	2N 5883	35	3	4	1	15	1500
25	80	80	125	SOT 93	TIP 35 B	TIP 36 B	25	1.5	4	1.8	15	1500
25	80	80	130	SOT 93	SGSD 110	SGSD 210	15	5	4	1.5	16	2000
25	80	80	200	TO 3	2N 5886	2N 5884	35	3	4	1	15	1500
25	100	100	125	SOT 93	TIP 35 C	TIP 36 C	25	1.5	4	1.8	15	1500
30	40	40	200	TO 3	2N 5301	2N 4398	40	1	2	0.75	10	1000
30	60	60	200	TO 3	2N 5302	2N 4399	40	1	2	0.75	10	1000
30	100	90	200	TO 3	MJ 802	MJ 4502	25	7.5	2	0.8	7.5	750

POWER BIPOLAR

EPITAXIAL BASE HIGH GAIN DARLINGTONS

Epitaxial base - $I_{CM} : 2 \rightarrow 30 \text{ A}$, $V_{CEO} : 45 \rightarrow 180 \text{ V}$

NPN and PNP types

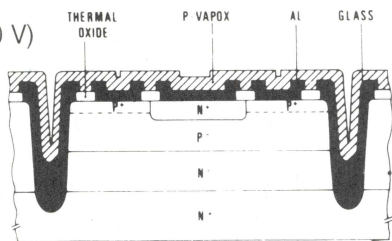
Medium V_{CEO} range (45 to 180 V)

Medium switching speed

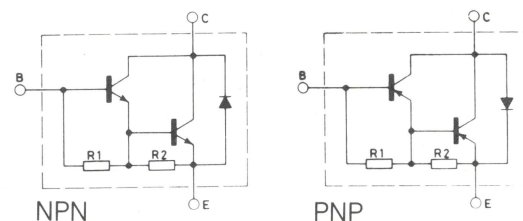
Medium f_T (2 to 20 MHz)

High ruggedness

Monolithic Darlingtons



Internal schematic diagrams



I_C (A)	V_{CBO} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type		$h_{FE} @ I_C / V_{CE}$ min			$V_{CEsat} @ I_C / I_B$		
					NPN	PNP	(A)	(V)	(V)	(A)	(mA)	
2	45	45	40	TO 126	BD 675	BD 676	750	1.5	3	2.5	1.5	30
2	60	60	50	SOT 82 (1)	SGS 110	SGS 115	1000	1	4	2.5	2	8
2	60	60	50	TO 220	TIP 110	TIP 115	1000	1	4	2.5	2	8
2	80	80	50	SOT 82 (1)	SGS 111	SGS 116	1000	1	4	2.5	2	8
2	80	80	50	TO 220	TIP 111	TIP 116	1000	1	4	2.5	2	8
2	100	100	50	SOT 82 (1)	SGS 112	SGS 117	1000	1	4	2.5	2	8
2	100	100	50	TO 220	TIP 112	TIP 117	1000	1	4	2.5	2	8
4	40	40	40	TO 126	2N 6037	2N 6034	500	0.5	3	2	2	8
4	45	45	40	TO 126	BD 675 A	BD 676 A	750	2	3	2.8	2	40
4	60	60	40	TO 126	2N 6038	2N 6035	500	0.5	3	2	2	8
4	60	60	40	TO 126	BD 677	BD 678	750	1.5	3	2.5	1.5	30
4	60	60	40	TO 126	BD 677 A	BD 678 A	750	2	3	2.8	2	40
4	60	60	40	TO 126	MJE 800	MJE 700	100	4	3	3	4	40
4	60	60	40	TO 126	MJE 801	MJE 701	100	4	3	3	4	40
4	80	80	40	TO 126	2N 6039	2N 6036	500	0.5	3	2	2	8
4	80	80	40	TO 126	BD 679	BD 680	750	1.5	3	2.5	1.5	30
4	80	80	40	TO 126	BD 679 A	BD 680 A	750	2	3	2.8	2	40
4	80	80	40	TO 126	MJE 802	MJE 702	100	4	3	3	4	40
4	80	80	40	TO 126	MJE 803	MJE 703	100	4	3	3	4	40
4	100	100	40	TO 126	BD 681	BD 682	750	1.5	3	2.5	1.5	30
4	180	180	10	TO 39	BDW 91	BDW 92	1000	2	5	2	2	4
5	60	60	65	SOT 82 (1)	SGS 120	SGS 125	1000	3	3	2	3	12
5	60	60	65	TO 220	TIP 120	TIP 125	1000	3	3	2	3	12
5	80	80	65	SOT 82 (1)	SGS 121	SGS 126	1000	3	3	2	3	12
5	80	80	65	TO 220	TIP 121	TIP 126	1000	3	3	2	3	12
5	100	100	65	SOT 82 (1)	SGS 122	SGS 127	1000	3	3	2	3	12
5	100	100	65	TO 220	TIP 122	TIP 127	1000	3	3	2	3	12
6	45	45	50	TO 220	BDW 23	BDW 24	750	2	3	2	2	8
6	60	60	50	TO 220	BDW 23 A	BDW 24 A	750	2	3	2	2	8
6	60	60	60	SOT 82 (1)	BD 331	BD 332	750	3	3	2	3	12
6	80	80	50	TO 220	BDW 23 B	BDW 24 B	750	2	3	2	2	8
6	80	80	60	SOT 82 (1)	BD 333	BD 334	750	3	3	2	3	12
6	100	100	50	TO 220	BDW 23 C	BDW 24 C	750	2	3	2	2	8
6	100	100	60	SOT 82 (1)	BD 335	BD 336	750	3	3	2	3	12
6	140	140	60	TO 220	BDX 53 E	BDX 54 E	500	2	5	2	2	10
6	150	150	15	TO 39	BDX 53 S	BDX 54 S	500	2	5	2	2	8
6	160	160	60	TO 220	BDX 53 F	BDX 54 F	500	2	5	2	2	10
8	40	40	65	TO 220	2N 6386		1000	3	3	2	3	6
8	40	40	65	SOT 82 (1)	SGS 6386		1000	3	3	2	3	6
8	45	45	60	TO 220	BDX 53	BDX 54	750	3	3	2	3	12
8	60	60	60	TO 220	BDX 53 A	BDX 54 A	750	3	3	2	3	12
8	60	60	65	SOT 82 (1)	SGS 130	SGS 135	1000	4	4	2	4	16
8	60	60	70	TO 220	TIP 130	TIP 135	1000	4	4	2	4	16
8	60	60	75	TO 220	2N 6043	2N 6040	1000	4	4	2	4	16
8	60	60	80	TO 220	TIP 100	TIP 105	1000	3	4	2	3	6

(1) Also available in SOT 194 package for SMD.

POWER BIPOLAR

EPITAXIAL BASE HIGH GAIN DARLINGTONS (Continued)

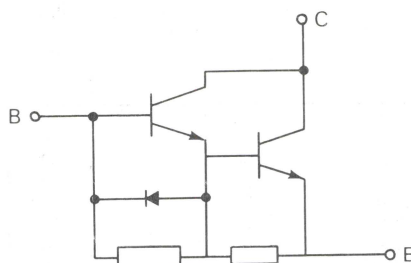
I _C (A)	V _{CB0} (V)	V _{CEO} (V)	P _{tot} (W)	Package	Type		h _{FE} @ I _C / V _{CE}		V _{CEsat} @ I _C / I _B		
					NPN	PNP	min	(A) (V)	(V)	(A)	(mA)
8	60	60	90	TO 3	MJ 1000	MJ 900	1000	3 3	2	3	12
8	80	80	60	TO 220	BDX 53 B	BDX 54 B	750	3 3	2	3	12
8	80	80	65	SOT 82 (1)	SGS 131	SGS 136	1000	4 4	2	4	16
8	80	80	70	TO 220	TIP 131	TIP 136	1000	4 4	2	4	16
8	80	80	75	TO 220	2N 6044	2N 6041	1000	4 4	2	4	16
8	80	80	80	TO 220	TIP 101	TIP 106	1000	3 4	2	3	6
8	80	80	90	TO 3	MJ 1001	MJ 901	1000	3 3	2	3	12
8	100	100	60	TO 220	BDX 53 C	BDX 54 C	750	3 3	2	3	12
8	100	100	65	SOT 82 (1)	SGS 132	SGS 137	1000	4 4	2	4	16
8	100	100	70	TO 220	TIP 132	TIP 137	1000	4 4	2	4	16
8	100	100	75	TO 220	2N 6045	2N 6042	1000	3 4	2	3	12
8	100	100	80	TO 220	TIP 102	TIP 107	1000	3 4	2	3	6
10	45	45	70	TO 220	BDX 33	BDX 34	750	4 3	2.5	4	8
10	45	45	100	TO 3	BDX 85	BDX 86	1000	3 3	2	4	16
10	60	60	65	TO 220	2N 6387		1000	5 3	2	5	10
10	60	60	65	SOT 82 (1)	SGS 6387		1000	5 3	2	5	10
10	60	60	70	TO 220	BDX 33 A	BDX 34 A	750	4 3	2.5	4	8
10	60	60	100	TO 3	BDX 85 A	BDX 86 A	1000	3 3	2	4	16
10	60	60	125	SOT 93	TIP 140	TIP 145	1000	5 4	3	10	40
10	60	60	150	TO 3	MJ 3000	MJ 2500	1000	5 3	2	5	20
10	80	80	100	TO 3	BDX 85 B	BDX 86 B	1000	3 3	2	4	16
10	80	80	65	TO 220	2N 6388		1000	5 3	2	5	10
10	80	80	65	SOT 82 (1)	SGS 6388		1000	5 3	2	5	10
10	80	80	70	TO 220	BDX 33 B	BDX 34 B	750	3 3	2.5	3	6
10	80	80	125	SOT 93	TIP 141	TIP 146	1000	5 4	3	10	40
10	80	80	150	TO 3	MJ 3001	MJ 2501	1000	5 3	2	5	20
10	100	100	70	TO 220	BDX 33 C	BDX 34 C	750	3 3	2.5	3	6
10	100	100	100	TO 3	BDX 85 C	BDX 86 C	1000	3 3	2	4	16
10	100	100	125	SOT 93	TIP 142	TIP 147	1000	5 4	3	10	40
12	45	45	80	TO 220	BDW 93	BDW 94	750	5 3	2	5	20
12	45	45	120	TO 3	BDX 87	BDX 88	1000	5 3	2	6	24
12	60	60	80	TO 220	BDW 93 A	BDW 94 A	750	5 3	2	5	20
12	60	60	120	TO 3	BDX 87 A	BDX 88 A	1000	5 3	2	6	24
12	60	60	125	SOT 93	BDV 65	BDV 64	1000	5 4	2	5	20
12	80	80	80	TO 220	BDW 93 B	BDW 94 B	750	5 3	2	5	20
12	80	80	120	TO 3	BDX 87 B	BDX 88 B	1000	5 3	2	6	24
12	80	80	125	SOT 93	BDV 65 A	BDV 64 A	1000	5 4	2	5	20
12	100	100	40	ISOWATT 220	BDW 93 CFI	BDW 94 CFI	750	5 3	2	5	20
12	100	100	80	TO 220	BDW 93 C	BDW 94 C	750	5 3	2	5	20
12	100	100	120	TO 3	BDX 87 C	BDX 88 C	1000	5 3	2	6	24
12	100	100	125	SOT 93	BDV 65 B	BDV 64 B	1000	5 4	2	5	20
12	180	160	40	ISOWATT 220	SGSD 93 FFI		1000	3 3	2	10	20
16	60	60	150	TO 3	MJ 4033	MJ 4030	1000	10 3	4	16	80
16	80	80	150	TO 3	MJ 4034	MJ 4031	1000	10 3	4	16	80
16	100	100	150	TO 3	MJ 4035	MJ 4032	1000	10 3	4	16	80
20	60	60	160	TO 3	2N 6282	2N 6285	750	10 3	3	20	200
20	80	80	160	TO 3	2N 6283	2N 6286	750	10 3	3	20	200
20	100	100	160	TO 3	2N 6284	2N 6287	750	10 3	3	20	200
25	80	80	130	SOT 93	SGSD 100	SGSD 200	300	20 3	1.75	10	40
30	60	60	200	TO 3	MJ 11012	MJ 11011	1000	20 5	4	30	300
30	90	90	200	TO 3	MJ 11014	MJ 11013	1000	20 5	4	30	300
30	120	120	200	TO 3	MJ 11016	MJ 11015	1000	20 5	4	30	300

(1) Also available in SOT 194 package for SMD.

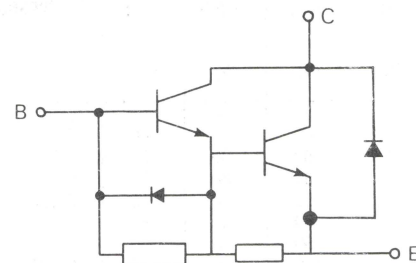
POWER BIPOLAR

FAST SWITCHING TRANSISTORS AND DARLINGTONS

Internal schematic diagrams



Bipolar transistors

Darlingtons
except BUD 48 DI

Darlington BUD 48 DI

120 / 300 V V_{CBO} RANGE

I_C	V_{CBO}	V_{CEO}	P_{tot}	Package	Type NPN	$V_{CE(sat)}$ @	I_C	I_B	t_r $t_d + t_r^*$	t_{sj} t_s^*	t_{fi} t_f^*
(A)	(V)	(V)	(W)			max (V)	(A)	(A)	(1) max (μs)	max (μs)	max (μs)
4	200	125	31	TO 220	D44 Q1	1	2	0.2	0.4	2 * (1)	1.7 * (1)
4	250	175	31	TO 220	D44 Q3	1	2	0.2	0.4	2 * (1)	1.7 * (1)
4	300	225	31	TO 220	D44 Q5	1	2	0.2	0.4	2 * (1)	1.7 * (1)
10	160	125	106	SOT 93	BUX 10 P	0.6	10	1	1.5	1.2 * (1)	0.3 * (1)
12	240	120	85	TO 220	BUV 27	0.7	4	0.4	0.8*	2 *	0.15*
14	180	90	85	TO 220	BUV 26	1.5	12	1.2	0.6*	2 *	0.15* (1)
15	200	125	125	TO 220	BUT 60	0.9	24	2.4	—	1.5	0.2
15	300	200	120	TO 3	BUV 41	1.2	8	1	0.5	2	0.3
15	300	200	125	SOT 93	BUW 91	0.9	6	0.6	0.5	2	0.3
20	220	160	150	TO 3	BUX 11 N	0.6	8	0.8	1.5	1.5 * (1)	0.5 * (1)
20	250	125	120	TO 3	BUV 40	1.2	15	1.9	1	1.7	0.3
20	250	125	125	SOT 93	BUW 90	0.9	11	1.1	1	1.7	0.3
20	250	200	150	TO 3	BUX 11	0.6	6	0.6	1	1.8 * (1)	0.4 * (1)
20	300	200	150	SOT 93	BUW 51	0.9	10	1	0.6	2	0.3
20	300	200	150	TO 3	BUV 51	1.2	14	1.75	0.6	2	0.3
20	300	250	150	TO 3	BUX 12	1	5	0.5	1	2 * (1)	0.5 * (1)
25	160	90	120	TO 3	BUV 39	1.2	20	2.5	1.1	1.7	0.3
25	160	90	125	SOT 93	BUW 89	0.9	15	1.5	1.1	1.7	0.3
25	160	125	150	TO 3	BUX 10	0.6	10	1	1.5	1.2 * (1)	0.3 * (1)
25	250	125	150	SOT 93	BUW 50	0.9	20	2	0.6	1.7	0.3
25	250	125	150	TO 3	BUV 50	1.2	24	3	0.6	1.7	0.3
30	120	60	150	SOT 93	BUW 48	1.4	40	4	1.5*	1.65*	0.5 *
30	120	60	150	TO 3	BUW 38	1.4	40	4	1.5*	1.65*	0.5 *
30	160	80	150	SOT 93	BUW 49	1.2	30	3	1.2*	1.65*	0.5 *
30	160	80	150	TO 3	BUW 39	1.2	30	3	1.2*	1.65*	0.5 *
40	200	125	115	TOP 3 I	BUT 70 I	0.9	70	7	—	1.8	0.2
40	200	125	200	SOT 93	BUT 70	0.9	70	7	—	1.8	0.2
40	250	125	100	TOP 3 I	BUW 60 I	0.9	50	5	—	1.5	0.25
40	250	125	175	SOT 93	BUW 60	0.9	50	5	—	1.5	0.25
40	250	200	250	TO 3	BUV 21	0.6	12	1.2	1.2*	1.8 * (1)	0.4 * (1)
40	250	200	250	TO 3	BUX 21	1.5	25	3	1.2*	1.8 * (1)	0.4 * (1)
40	300	200	100	TOP 3 I	BUW 61 I	0.9	25	2.5	—	2.4	0.25
40	300	200	100	TOP 3 I	BUT 71 I	0.9	40	4	—	2.4	0.25
40	300	200	175	SOT 93	BUT 71	0.9	40	4	—	2.4	0.25
40	300	200	175	SOT 93	BUW 61	0.9	25	2.5	—	2.4	0.25
40	300	250	250	TO 3	BUV 22	0.6	25	2.5	1.3	2 * (1)	0.5 * (1)
40	300	250	350	TO 3	BUX 22	1.5	20	2.5	1.3*	2 * (1)	0.5 * (1)
47	120	60	250	TO 3	BUV 18	1.5	80	8	1.5*	1.7 *	0.5 *
47	160	80	250	TO 3	BUV 19	1.2	60	6	1.3*	1.7 *	0.5 *
50	160	125	250	TO 3	BUV 20	0.6	25	2.5	1.5	1.2 * (1)	0.3 * (1)
50	160	125	350	TO 3	BUX 20	1.2	50	5	1.5*	1.2 * (1)	0.3 * (1)
50	200	125	250	TO 3	BUT 90	0.9	70	7	1.2*	2 * (1)	0.3 (1)
50	200	125	300	TO 3	BUT 100	0.9	100	10	—	2	0.2
50	250	125	250	TO 3	BUV 60	1.2	60	7.5	0.8	1.5	0.25
50	300	200	250	TO 3	BUV 61	1.2	40	5	0.7	2.4	0.25
50	300	200	250	TO 3	BUT 91	1.2	40	4	0.8	1.5 *	0.65*
60	300	200	350	TO 3	BUR 51	1	30	2	1	2 * (1)	0.6 * (1)
70	200	125	350	TO 3	BUR 50 S	1	35	2	1.2	2 * (1)	0.5 * (1)

For switching times, $T_j = 100^\circ\text{C}$, unless otherwise specified.(1) $T_j = 25^\circ\text{C}$

POWER BIPOLAR

350 / 650 V V_{CBO} RANGE

I _C	V _{CBO}	V _{CEO}	P _{tot}	Package	Type NPN	V _{CE (sat)} @	I _C / I _B	t _d + t _r *	t _{si}	t _{fi}
(A)	(V)	(V)	(W)			max (V)	(A) (A)	(1) max (μs)	max (μs)	max (μs)
4	600	300	75	TO 220	MJE 13004	1	4 1	0.7	3.5* (1)	0.9 * (1)
8	450	300	100	TO 220	2N 6928	1	8 1.6	0.5	3.5	0.4
8	450	300	150	TO 3	2N 6671	2	8 4	0.5	4 *	0.8 *
8	550	350	100	TO 220	2N 6929	1	8 1.6	0.5	3.5	0.4
8	550	350	150	TO 3	2N 6672	2	8 4	0.5	4 *	0.8 *
8	600	300	80	TO 220	MJE 13006	1.5	5 1	1	3 * (1)	0.7 * (1)
8	650	400	100	TO 220	2N 6930	1	8 1.6	0.5	3.5	0.4
8	650	400	150	TO 3	2N 6673	1	5 1	0.5	4 *	0.8 *
10	450	300	150	SOT 93	2N 6931	1	10 2	0.7	3.5	0.4
10	650	400	150	SOT 93	2N 6932	1	10 2	0.7	3.5	0.4
12	350	250	75	TOP 3 I	BUW 92 I	0.9	5 0.5	0.4	2.4	0.4
12	350	250	120	TO 3	BUV 42	1.2	6 0.75	0.4	2.4	0.4
12	350	250	125	SOT 93	BUW 92	0.9	5 0.5	0.4	2.4	0.4
12	400	300	120	TO 3	BUV 42 A	0.9	4 0.4	—	3	0.4
12	400	200	85	TO 220	BUV 28	1.5	6 0.6	1 *	1.5* (1)	0.25* (1)
12	600	300	100	TO 220	MJE 13008	1.5	8 1.6	1	3 * (1)	0.7 * (1)
15	350	300	175	SOT 93	2N 6933	1	15 3	0.7	3.5	0.4
15	400	300	125	TO 220	BUT 62	0.9	10 1	—	2.2	0.4
15	400	350	175	SOT 93	2N 6934	1	15 3	0.7	3.5	0.4
15	450	300	175	TO 3	2N 6674	5	15 5	0.6	4 *	1 *
15	450	300	175	TO 3	2N 6676	1	15 3	0.6	4 *	1 *
15	450	400	175	SOT 93	2N 6935	1	15 3	0.7	3.5	0.4
15	550	350	175	TO 3	2N 6677	1	15 3	0.6	4 *	1 *
15	650	400	175	TO 3	2N 6675	5	15 5	0.6	4 *	1 *
15	650	400	175	TO 3	2N 6678	5	15 3	0.6	4 *	1 *
16	600	400	90	TOP 3 I	BUD 48 DI (2)	1.6	10 0.5	—	3.6	0.4
20	350	250	50	ISOWATT 218	BUW 52 FI	0.9	8 0.8	0.6	2.4	0.4
20	350	250	150	SOT 93	BUW 52	0.9	8 0.8	0.6	2.4	0.4
20	350	250	150	TO 3	BUV 52	1.2	12 1.5	0.6	2.4	0.4
20	400	300	150	TO 3	BUV 52 A	0.9	7 0.7	—	3	0.4
20	450	400	350	TO 3	BUX 24	1	12 2.4	1.6*	3 * (1)	1.4 * (1)
30	400	325	350	TO 3	BUX 23	1	16 3.2	1.3*	2.5* (1)	1.2 * (1)
40	350	250	250	TO 3	BUV 62	1.2	24 3	0.6	2.5	0.4
40	400	300	250	TO 3	BUV 62 A	0.9	15 1.5	—	3	0.4
40	400	300	100	TOP 3 I	BUW 62 I	0.9	15 1.5	—	3	0.4
40	400	300	115	TOP 3 I	BUT 72 I	0.9	30 3	—	3	0.4
40	400	300	175	SOT 93	BUW 62	0.9	15 1.5	—	3	0.4
40	400	300	200	SOT 93	BUT 72	0.9	30 3	—	3	0.4
45	450	850	300	TO 3	BUX 348	0.9	30 6	—	4.5	0.4
50	350	250	250	TO 3	BUT 92	1.2	35 3.5	—	3	0.4
50	400	300	250	TO 3	BUT 92 A	0.9	30 3	—	3	0.4
50	400	300	300	TO 3	BUT 102	0.9	40 4	—	3	0.4
60	350	250	350	TO 3	BUR 52	1.8	25 2	1	2 * (1)	0.6 * (1)

For switching times, T_j = 100°C unless otherwise specified.

(1) T_j = 25°C.

(2) Darlington.

POWER BIPOLAR

700 / 1000 V V_{CBO} RANGE

I_C	V_{CBO}	V_{CEO}	P_{tot}	Package	Type NPN	$V_{CE(sat)}$ @	I_C / I_B	t_r $t_d + t_r^*$	t_{si} t_s^*	t_{fi} t_f^*
(A)	(V)	(V)	(W)			max (V)	(A) (A)	(1) max (μs)	max (μs)	max (μs)
2	800	400	50	TO 220	BUX 84	1	1 0.2	0.5*	3.5* (1)	1.4* (1)
2	1000	450	50	TO 220	BUX 85	1	1 0.2	0.5*	3.5* (1)	1.4* (1)
4	700	400	75	TO 220	MJE 13005	1	4 1	0.7	3.5* (1)	0.9* (1)
4	850	400	75	TO 220	MJE 13005 A	1	4 1	0.7	3.5* (1)	0.9* (1)
4	850	400	70	TO 220	BUD 46 (2)	1.6	2.5 0.12	—	2.8	0.4
4	1000	450	70	TO 220	BUD 46 A (2)	1.6	2.5 0.12	—	2.8	0.4
5	850	400	70	TO 220	BUV 46	1.5	2.5 0.5	—	3	0.8
5	850	400	30	ISOWATT 220	BUV 46 FI	1.5	2.5 0.5	—	3	0.8
5	850	400	83	TO 220	BUT 11	1.5	3 0.6	—	4	0.8
5	850	400	35	ISOWATT 220	BUT 11 FI	1.5	3 0.6	—	4	0.8
5	1000	450	70	TO 220	BUV 46 A	1.5	2 0.4	—	3	0.8
5	1000	450	30	ISOWATT 220	BUV 46 AFI	1.5	2 0.4	—	3	0.8
5	1000	450	83	TO 220	BUT 11 A	1.5	2.5 0.5	—	4	0.8
5	1000	450	35	ISOWATT 220	BUT 11 AFI	1.5	2.5 0.5	—	4	0.8
6	800	375	75	TO 3	BU 326	3	4 1.25	0.5	3.5* (1)	0.5* (1)
6	900	400	75	TO 3	BU 326 A	3	4 1.25	0.5	3.5* (1)	0.5* (1)
7	1000	450	70	TO 220	BUV 56 A	1.2	4 0.8	—	3 * (1)	0.4* (1)
8	700	400	80	TO 220	MJE 13007	1.5	5 1	1	3 * (1)	0.7* (1)
8	850	400	80	TO 220	MJE 13007 A	1.5	5 1	1	3 * (1)	0.7* (1)
8	850	400	100	TO 220	BUD 47 (2)	1.6	5 0.25	—	3.2	0.4
9	850	400	125	TO 3	BUX 47	1.5	6 1.2	1	4 *	0.4*
9	850	450	50	ISOWATT 218	BUV 47 FI	1.5	5 1	1 *	4 *	0.4*
9	850	450	75	TOP 3I	BUV 47I	1.5	5 1	1 *	4 *	0.4*
9	850	450	120	SOT 93	BUV 47	1.5	5 1	1 *	4 *	0.4*
9	1000	450	50	ISOWATT 218	BUV 47 AFI	1.5	5 1	1	4	0.4
9	1000	450	125	TO 3	BUX 47 A	1.5	5 1	1	4 *	0.4*
9	1000	450	75	TOP 3I	BUV 47 AI	1.5	5 1	1 *	4 *	0.4*
9	1000	450	120	SOT 93	BUV 47 A	1.5	5 1	1 *	4 *	0.4*
12	700	400	100	TO 220	MJE 13009	1.5	8 1.6	1	3 * (1)	0.7* (1)
12	850	400	100	TO 220	MJE 13009 A	1.5	8 1.6	1	3 * (1)	0.7* (1)
12	850	450	100	TO 220	BUV 66 A	1.2	6.5 1.3	—	3	0.4
15	850	400	50	ISOWATT 218	BUV 48 FI	1.5	10 2	1	5	0.4
15	850	400	125	SOT 93	BUV 48	1.5	10 2	1	5	0.4
15	850	400	175	TO 3	BUX 48	1.5	10 2	1	5	0.4
15	850	450	100	TO 220	BUV 66	1.2	8 1.6	—	3	0.4
15	850	450	100	TOP 3I	BUV 48 I	1.5	10 2	1	5 *	0.4*
15	1000	450	50	ISOWATT 218	BUV 48 AFI	1.5	8 1.6	1	5	0.4
15	1000	450	100	TOP 3I	BUV 48 AI	1.5	8 1.6	1	5	0.4
15	1000	450	125	SOT 93	BUV 48 A	1.5	10 2	1	5	0.4
15	1000	450	175	TOP 3	BUX 48 A	1.5	10 2	1	5	0.4
16	850	400	90	TOP 3I	BUD 48 I (2)	1.6	10 0.5	—	3.6	0.4
16	850	400	150	SOT 93	BUD 48 (2)	1.6	10 0.5	—	3.6	0.4
16	1000	450	90	TOP 3I	BUD 48 AI (2)	1.6	10 0.5	—	3.6	0.4
16	1000	450	150	SOT 93	BUD 48 A (2)	1.6	7.5 0.5	—	3.6	0.4
24	1000	450	115	TOP 3 I	BUX 98 API	1.2	16 3.2	—	4.5	0.4
24	1000	450	200	SOT 93	BUX 98 AP	1.2	16 3.2	—	4.5	0.4
30	1000	450	250	TO 3	BUX 98 A	1.5	16 3.2	1	4.5	0.4
32	850	400	110	TOP 3 I	BUD 98 I (2)	1.6	20 1	—	3.8	0.4
32	850	400	250	SOT 93	BUD 98 (2)	1.6	20 1	—	3.8	0.4
35	1000	450	300	TO 3	BUX 348 A	1.2	24 4.8	—	4.5	0.4

For switching times, $T_j = 100^\circ\text{C}$, unless otherwise specified. (1) $T_j = 25^\circ\text{C}$
(2) Darlington.

1200 V V_{CBO} RANGE

I_C	V_{CBO}	V_{CEO}	P_{tot}	Package	Type	$V_{CE(sat)}$ @	I_C / I_B	t_r $t_d + t_r^*$	t_{si} t_s^*	t_{fi} t_f^*
(A)	(V)	(V)	(W)			max (V)	(A) (A)	(1) max (μs)	max (μs)	max (μs)
15	1200	700	50	ISOWATT 218	BUV 48 CFI	1.5	6 1.5	1	6	0.6
15	1200	700	100	TOP 3 I	BUV 48 CI	1.5	6 1.5	1	6	0.6
15	1200	700	120	SOT 93	BUV 48 C	1.5	6 1.5	1	6	0.6
15	1200	700	175	TO 3	BUX 48 C	1.5	6 1.5	1	6	0.6
30	1200	700	250	TO 3	BUX 98 C	1.5	12 3	1	6	0.6

For switching times, $T_j = 100^\circ\text{C}$ unless otherwise specified. (1) $T_j = 25^\circ\text{C}$.

POWER BIPOLAR

«FASTSWITCH» SERIES
(Hollow Emitter, E.T.D.)

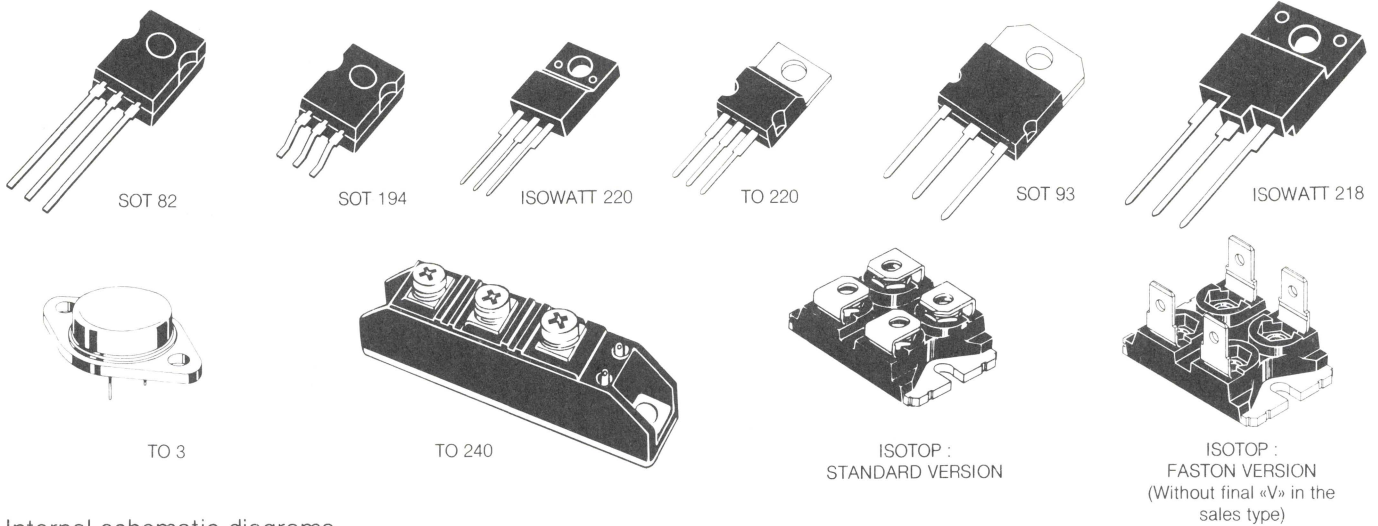
I _C (A)	V _{CB0} V _{CEV} [*] (V)	V _{CEO} (V)	P _{tot} (W)	Package	Type NPN	V _{CE (sat)} @		I _C / (A)	I _B (A)	t _r t _d + t _r [*] (1) max (μs)	t _{si} t _s [*] max (μs)	t _{fi} t _f [*] max (μs)
						max (V)						
4	1200	600	70	TO 220	SGSF324	1.5		1.75	0.35	1 *	4.5* (1)	0.35* (1)
4	1200	600	35	ISOWATT 220	SGSIF324	1.5		1.75	0.35	1 *	4.5* (1)	0.35* (1)
4	1200	600	45	ISOWATT 218	SGSIF424	1.5		1.75	0.35	1 *	4.5* (1)	0.35* (1)
4	1200	600	80	SOT 93	SGSF424	1.5		1.75	0.35	1 *	4.5* (1)	0.35* (1)
4	1300	600	45	ISOWATT 218	SGSIF425	1.5		1.75	0.35	1 *	4.5* (1)	0.35* (1)
4	1300	600	80	SOT 93	SGSF425	1.5	1.25	0.25		1 *	4.5* (1)	0.35* (1)
4	1300	600	35	ISOWATT 220	SGSIF325	1.5	1.25	0.25		1 *	4.5* (1)	0.35* (1)
5	850	400	45	ISOWATT 218	SGSIF421	1.5		3.5	0.7	1 *	2.5* (1)	0.3 *
5	850	400	70	TO 220	SGSF321	1.5		3.5	0.7	1 *	2.5* (1)	0.3 *
5	850	400	35	ISOWATT 220	SGSIF321	1.5		3.5	0.7	1 *	2.5* (1)	0.3 *
5	850	400	80	SOT 93	SGSF421	1.5		3.5	0.7	1 *	2.5* (1)	0.3 *
5	1000	450	45	ISOWATT 218	SGSIF423	1.5		2.5	0.5	1 *	2.5* (1)	0.3 *
5	1000	450	35	ISOWATT 220	SGSIF323	1.5		2.5	0.5	1 *	2.5* (1)	0.3 *
5	850	450	70	TO 220	SGSF323	1.5		2.5	0.5	1 *	2.5* (1)	0.3 *
5	1000	450	80	SOT 93	SGSF423	1.5		2.5	0.5	1 *	2.5* (1)	0.3 *
7	1200	600	55	ISOWATT 218	SGSIF444	1.5		3.5	0.7	1.2*	3.5* (1)	0.3 *
7	1200	600	40	ISOWATT 220	SGSIF344	1.5		3.5	0.7	1.2*	3.5* (1)	0.3 *
7	1200	600	85	TO 220	SGSF344	1.5		3.5	0.7	1.2*	3.5* (1)	0.3 *
7	1200	600	115	TO 3	SGSF544	1.5		3.5	0.7	1.2*	3.5* (1)	0.3 *
7	1200	600	95	SOT 93	SGSF444	1.5		3.5	0.7	1.2*	3.5* (1)	0.3 *
7	1300	600	55	ISOWATT 218	SGSIF445	1.5		3	0.6	1.2*	3.5* (1)	0.3 *
7	1300	600	40	ISOWATT 220	SGSIF345	1.5		3	0.6	1.2*	3.5* (1)	0.3 *
7	1300	600	125	TO 3	SGSF545	1.5		3	0.6	1.2*	3.5* (1)	0.3 *
7	1300	600	95	SOT 93	SGSF445	1.5		3	0.6	1.2*	3.5* (1)	0.3 *
7.5	850*	450	80	TO 220	BUF 405	2		5	1	—	1.8	0.1
7.5	1000*	450	80	TO 220	BUF 405 A	2		5	1	—	1.8	0.1
8	1000	400	40	ISOWATT 220	SGSIF343	1.5		4.5	0.9	1 *	2.5* (1)	0.35* (1)
8	1000	450	55	ISOWATT 218	SGSIF443	1.5		4.5	0.9	1 *	2.5* (1)	0.35* (1)
8	1000	450	85	TO 220	SGSF343	1.5		4.5	0.9	1 *	2.5* (1)	0.35* (1)
8	1000	450	115	TO 3	SGSF543	1.5		4.5	0.9	1 *	2.5* (1)	0.35* (1)
8	1000	450	95	SOT 93	SGSF443	1.5		4.5	0.9	1 *	2.5* (1)	0.35* (1)
10	850	400	40	ISOWATT 220	SGSIF341	1.5		6	1.2	1 *	2.5* (1)	0.35* (1)
10	850	400	55	ISOWATT 218	SGSIF441	1.5		6	1.2	1 *	2.5* (1)	0.35* (1)
10	850	400	85	TO 220	SGSF341	1.5		6	1.2	1 *	2.5* (1)	0.35* (1)
10	850	400	115	TO 3	SGSF541	1.5		6	1.2	1 *	2.5* (1)	0.35* (1)
10	850	400	85	SOT 93	SGSF441	1.5		6	1.2	1 *	2.5* (1)	0.35* (1)
10	1200	600	65	ISOWATT 218	SGSIF464	1.5		6	1.2	1.2*	3.5* (1)	0.4 *
10	1200	600	150	TO 3	SGSF564	1.5		6	1.2	1.2*	3.5* (1)	0.4 *
10	1200	600	125	SOT 93	SGSF464	1.5		6	1.2	1.2*	3.5* (1)	0.4 *
10	1300	600	65	ISOWATT 218	SGSIF465	1.5		5	1	1.2*	3.5* (1)	0.4 *
10	1300	600	150	TO 3	SGSF565	1.5		5	1	1.2*	3.5* (1)	0.4 *
10	1300	600	125	SOT 93	SGSF465	1.5		5	1	1.2*	3.5* (1)	0.4 *
12	1000	450	65	ISOWATT 218	SGSIF463	1.5		7	1.4	1.7*	2.3* (1)	0.5 *
12	1000	450	150	TO 3	SGSF563	1.5		7	1.4	1.7*	2.3* (1)	0.5 *
12	1000	450	125	SOT 93	SGSF463	1.5		7	1.4	1.7*	2.3* (1)	0.5 *
15	850	350	65	ISOWATT 218	SGSIF461	1.5		10	2	1.7*	2.3* (1)	0.5 *
15	850	350	150	TO 3	SGSF561	1.5		10	2	1.7*	2.3* (1)	0.5 *
15	850	350	125	SOT 93	SGSF461	1.5		10	2	1.7*	2.3* (1)	0.5 *
15	850*	450	85	TOP 3I	BUF 410 I (2)	0.5		10	2	—	1.8	0.1
15	850*	450	125	SOT 93	BUF 410 (2)	0.5		10	2	—	1.8	0.1
15	1000*	450	85	TOP 3I	BUF 410 AI (2)	0.5		10	2	—	1.8	0.1
15	1000*	450	125	SOT 93	BUF 410 A (2)	0.5		10	2	—	1.8	0.1
20	1200	600	250	TO 3	SGSF664	1.5		12	2.4	1.2*	3.5* (1)	0.4 *
20	1300	600	250	TO 3	SGSF665	1.5		10	2	1.2*	3.5* (1)	0.4 *
24	1000	450	250	TO 3	SGSF663	1.5		14	2.8	1.7*	2.3* (1)	0.5 *
30	850	400	250	TO 3	SGSF661	1.5		20	4	—	2	0.1
30	850*	450	115	TOP 3I	BUF 420 I (2)	0.5		20	4	—	2	0.1
30	850*	450	200	SOT 93	BUF 420 (2)	0.5		20	4	—	2	0.1
30	1000*	450	115	TOP 3I	BUF 420 AI (2)	0.5		20	4	—	2	0.1
30	1000*	450	200	SOT 93	BUF 420 A (2)	0.5		20	4	—	2	0.1

For switching times, T_j = 100°C unless otherwise specified.

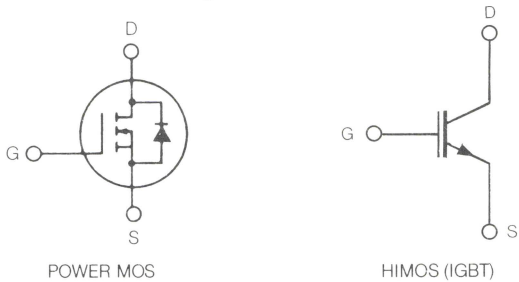
(1) T_j = 25°C.

(2) E.T.D. : Easy to drive.

POWER MOS



Internal schematic diagrams



$V_{(BR) DSS}$ (V)	$R_{DS(on)}$ max (Ω)	@ I_D (A)	Package	Type	I_D max (A)	P_{tot} (W)	g_{fs} min (mho)	C_{iss} max (pF)
50	0.3	3.5	TO 220	SGSP358	7	50	1.5	270
50	0.15	7.5	TO 220	MTP15N05L	15	75	5	900
50	0.15	7.5	ISOWATT 220	MTP15N05LFI	10	30	5	900
50	0.15	7.5	TO 220	STLT19**	15	75	5	480
50	0.15	7.5	ISOWATT 220	STLT19FI**	10	30	5	480
50	0.13	5	SOT 82	SGSP222*	10	50	3	550
50	0.13	8	TO 220	SGSP322	16	75	3	550
50	0.12	10	TO 220	BUZ10A	17	75	3	2000
50	0.12	9	TO 220	BUZ71A	13	40	3	650
50	0.12	9	TO 220	IRFZ22	14	40	5	850
50	0.12	9	ISOWATT 220	IRFZ22FI	12	30	5	850
50	0.1	9	TO 220	BUZ71	14	40	3	650
50	0.1	9	ISOWATT 220	BUZ71FI	12	30	3	650
50	0.1	9	TO 220	IRFZ20	15	40	5	850
50	0.1	9	ISOWATT 220	IRFZ20FI	12.5	30	5	850
50	0.08	13	TO 220	BUZ10	20	70	8	700 typ
50	0.08	12.5	TO 220	STLT29**	25	100	9	1200
50	0.06	15	TO 220	BUZ11A	25	75	4	2000
50	0.06	14	TO 220	SGSP382	28	100	5	1400
50	0.06	15	TO 218	SGSP482	30	125	5	1400
50	0.04	15	TO 220	BUZ11	30	75	4	2000
50	0.04	15	ISOWATT 220	BUZ11FI	20	35	4	2000
50	0.035	29	TO 220	IRFZ42	35	125	17	3000
50	0.033	20	TO 218	SGSP492	40	150	10	2800
50	0.033	20	TO 3	SGSP592	40	150	10	2800
50	0.028	29	TO 220	IRFZ40	35	125	17	3000
50	0.023	30	TO 220	STVHD90	52	125	30	3000
60	0.15	7.5	TO 220	MTP15N06L	15	75	5	900
60	0.15	7.5	ISOWATT 220	MTP15N06LFI	10	30	5	900
60	0.15	6	TO 220	MTP3055A	12	40	4.5	500

* Also available in SOT 194 package for SMD.

** Logic level V_{GS} threshold.

POWER MOS

V _{(BR) DSS} (V)	R _{DS (on)} max (Ω)	@ I _D (A)	Package	Type	I _D max (A)	P _{tot} (W)	g _{fs} min (mho)	C _{iss} max (pF)
60	0.15	6	ISOWATT 220	MTP3055AFI	10	30	4.5	500
60	0.15	7.5	TO 220	STLT20**	15	75	5	480
60	0.15	7.5	ISOWATT 220	STLT20FI**	10	30	5	480
60	0.13	8	TO 220	SGSP321	16	75	3	550
60	0.08	20	TO 3	IRF153	33	150	9	3000
60	0.08	22	TO 218	IRFP153	34	150	13	3000
60	0.08	22	ISOWATT 218	IRFP153FI	21	65	13	3000
60	0.08	12.5	TO 220	STLT30**	25	100	9	1200
60	0.06	14	TO 220	SGSP381	28	100	5	1400
60	0.05	15	TO 218	SGSP481	30	125	5	1400
60	0.055	20	TO 3	IRF151	40	150	9	3000
60	0.055	22	TO 218	IRFP151	40	150	13	3000
60	0.055	22	ISOWATT 218	IRFP151FI	26	65	13	3000
60	0.04	15	TO 220	BUZ11S2	30	75	4	2000
60	0.04	15	ISOWATT 220	BUZ11S2FI	20	35	4	2000
60	0.033	20	TO 218	SGSP491	40	150	10	2800
60	0.033	20	TO 3	SGSP591	40	150	10	2800
60	0.028	20	TO 218	MTH40N06	40	150	10	5000
60	0.028	20	ISOWATT218	MTH40N06FI	26	65	10	5000
80	0.36	5.6	TO 220	IRF523	8	60	2.7	600
80	0.36	5.6	ISOWATT 220	IRF523FI	6	30	2.7	600
80	0.27	5.6	TO 220	IRF521	9.2	60	2.7	600
80	0.27	5.6	ISOWATT 220	IRF521FI	7	30	2.7	600
80	0.23	8.3	TO 220	IRF533	12	79	5.1	800
80	0.23	8.3	ISOWATT 220	IRF533FI	8	35	5.1	800
80	0.16	8.3	TO 220	IRF531	14	79	5.1	800
80	0.16	8.3	ISOWATT220	IRF531FI	9	35	5.1	800
80	0.1	17	TO 3	IRF143	25	125	8.7	1600
80	0.1	17	TO 220	IRF543	25	125	8.7	1600
80	0.1	17	ISOWATT 220	IRF543FI	14	40	8.7	1600
80	0.1	11	TO 220	SGSP362	22	100	4.5	1200
80	0.1	12.5	TO 218	SGSP462	25	125	4.5	1200
80	0.077	17	TO 3	IRF141	28	125	8.7	1600
80	0.077	17	TO 220	IRF541	28	125	8.7	1600
80	0.077	17	ISOWATT 220	IRF541FI	15	40	8.7	1600
80	0.05	17.5	TO 218	SGSP472	35	150	9	2200
100	1.4	1.2	SOT 82	SGSP201*	2	18	0.5	125
100	1.4	1.2	TO 220	SGSP301	2	18	0.5	125
100	0.6	3	TO 220	SGSP351	6	50	1	250
100	0.36	5.6	TO 220	IRF522	8	60	2.7	600
100	0.36	5.6	ISOWATT 220	IRF522FI	6	30	2.7	600
100	0.3	5.5	TO 220	SGSP311	11	75	2	480
100	0.27	5.6	TO 220	IRF520	9.2	60	2.7	600
100	0.27	5.6	ISOWATT 220	IRF520FI	7	30	2.7	600
100	0.25	5	TO 220	BUZ72A	9	40	2.7	600
100	0.23	8.3	TO 220	IRF532	12	79	5.1	800
100	0.23	8.3	ISOWATT 220	IRF532FI	8	35	5.1	800
100	0.2	6	TO 220	BUZ20	12	75	2.7	2000
100	0.16	8.3	TO 220	IRF530	14	79	5.1	800
100	0.16	8.3	ISOWATT 220	IRF530FI	9	35	5.1	800
100	0.15	9	TO 220	SGSP361	18	100	4.5	1200
100	0.15	10	TO 218	SGSP461	20	125	4.5	1200
100	0.1	9	TO 220	BUZ21	19	75	4	2000
100	0.1	9	TO 3	BUZ25	19	78	4	2000
100	0.1	17	TO 3	IRF142	25	125	8.7	1600
100	0.1	17	TO 220	IRF542	25	125	8.7	1600
100	0.1	17	ISOWATT 220	IRF542FI	14	40	8.7	1600
100	0.08	20	TO 3	IRF152	33	150	9	3000
100	0.08	22	TO 218	IRFP152	34	150	13	3000
100	0.08	22	ISOWATT 218	IRFP152FI	21	65	13	3000
100	0.077	17	TO 3	IRF140	28	125	8.7	1600
100	0.077	17	TO 220	IRF540	28	125	8.7	1600
100	0.077	17	ISOWATT 220	IRF540FI	15	40	8.7	1600
100	0.075	15	TO 218	SGSP471	30	150	9	2200
100	0.055	20	TO 3	IRF150	40	150	9	3000

* Also available in SOT 194 package for SMD.

** Logic level V_{GS} threshold.

POWER MOS

V _{(BR) DSS} (V)	R _{DS (on)} max (Ω)	@ I _D (A)	Package	Type	I _D max (A)	P _{tot} (W)	g _{fs} min (mho)	C _{iss} max (pF)
100	0.055	22	TO 218	IRFP150	40	150	13	3000
100	0.055	22	ISOWATT 218	IRFP150FI	26	65	13	3000
100	0.014	50	TO 240	SGS100MA010D1	120	400	20	11200
100	0.014	60	ISOTOP	TSD4M150V	135	500	20	11200
100	0.009	75	TO 240	SGS150MA010D1	150	400	20	14000
150	1.2	2.5	TO 220	IRF623	4	40	1.3	600
150	1.2	2.5	ISOWATT 220	IRF623FI	3.5	30	1.3	600
150	0.8	2.5	TO 220	IRF621	5	40	1.3	600
150	0.8	2.5	ISOWATT 220	IRF621FI	4	30	1.3	600
200	1.2	2.5	TO 220	IRF622	4	40	1.3	600
200	1.2	2.5	ISOWATT 220	IRF622FI	3.5	30	1.3	600
200	0.8	2.5	TO 220	IRF620	5	40	1.3	600
200	0.8	2.5	ISOWATT 220	IRF620FI	4	30	1.3	600
200	0.75	3	TO 220	SGSP317	6	75	1.5	500
200	0.4	4.5	TO 220	BUZ32	9.5	75	2.2	2000
200	0.33	6	TO 220	SGSP367	12	100	3	1200
200	0.17	10	TO 218	SGSP477	20	150	8	2200
200	0.17	10	TO 3	SGSP577	20	150	8	2200
200	0.021	60	ISOTOP	TSD4M250V	110	500	28	12000
250	1.2	2.5	TO 220	SGSP316	5	75	1.5	500
250	0.45	5	TO 220	SGSP363	10	100	3	1200
350	2.5	1.8	TO 220	IRF723	2.8	50	1	800
350	2.5	1.8	ISOWATT 220	IRF723FI	2	30	1	600
350	1.8	1.8	TO 220	IRF721	3.3	50	1	600
350	1.8	1.8	ISOWATT 220	IRF721FI	2.5	30	1	600
350	1.5	3	TO 220	IRF733	4.5	74	2.9	800
350	1.5	3	ISOWATT 220	IRF733FI	3	35	2.9	800
350	1	3	TO 220	IRF731	5.5	74	2.9	800
350	1	3	ISOWATT 220	IRF731FI	3.5	35	2.9	800
350	0.8	5.2	TO 220	IRF743	8.3	125	4	1600
350	0.8	5.2	ISOWATT 220	IRF743FI	4.5	40	4	1600
350	0.55	5.2	TO 220	IRF741	10	125	4	1600
350	0.55	5.2	ISOWATT 220	IRF741FI	5.5	40	4	1600
350	0.075	30	ISOTOP	TSD4M351V	50	500	28	12000
400	20	0.3	TO 220	SGSP341	0.8	18	0.1	105
400	2.5	1.5	TO 220	BUZ76A	2	40	0.8	600
400	2.5	1.8	TO 220	IRF722	2.8	50	1	600
400	2.5	1.8	ISOWATT 220	IRF722FI	2	30	1	600
400	1.8	1.5	TO 220	BUZ76	3	40	0.8	500
400	1.8	1.8	TO 220	IRF720	3.3	50	1	600
400	1.8	1.8	ISOWATT 220	IRF720FI	2.5	30	1	600
400	1.5	2.5	TO 220	BUZ60B	4.5	75	1.7	2000
400	1.5	3	TO 220	IRF732	4.5	74	2.9	800
400	1.5	3	ISOWATT 220	IRF732FI	3	35	2.9	800
400	1	2.5	TO 220	BUZ60	5.5	75	1.7	2000
400	1	3	TO 220	IRF730	5.5	74	2.9	800
400	1	3	ISOWATT 220	IRF730FI	3.5	35	2.9	800
400	0.8	5.2	TO 220	IRF742	8.3	125	4	1600
400	0.8	5.2	ISOWATT 220	IRF742FI	4.5	40	4	1600
400	0.55	5.2	TO 220	IRF740	10	125	4	1600
400	0.55	5.2	ISOWATT 220	IRF740FI	5.5	40	4	1600
400	0.55	5	TO 218	SGSP475	10	150	6	2100
400	0.55	5	TO 3	SGSP575	10	150	6	2100
400	0.3	8	TO 3	IRF350	15	150	8	3000
400	0.3	8	ISOWATT 218	IRFP350FI	10	70	8	3000
400	0.075	30	ISOTOP	TSD4M350V	50	500	28	12000
450	4	1.4	TO 220	IRF823	2.2	50	1	400
450	4	1.4	ISOWATT 220	IRF823FI	1.5	30	1	400
450	3	1.4	TO 220	IRF821	2.5	50	1	400
450	3	1.4	ISOWATT 220	IRF821FI	2	30	1	400
450	3	1.2	SOT 82	SGSP230*	2.5	50	0.8	450
450	3	1.5	TO 220	SGSP330	3	75	0.8	450
450	2	2.5	TO 220	IRF833	4	74	2.7	800
450	2	2.5	ISOWATT 220	IRF833FI	2.5	35	2.7	800

* Also available in SOT 194 package for SMD.

POWER MOS

V _{(BR) DSS} (V)	R _{DS (on)} max (Ω)	@ I _D (A)	Package	Type	I _D max (A)	P _{tot} (W)	g _{fs} min (mho)	C _{iss} max (pF)
450	1.5	2.5	TO 220	IRF831	4.5	74	2.7	800
450	1.5	2.5	ISOWATT 220	IRF831FI	3	35	2.7	800
450	1.5	2.5	TO 220	SGSP364	5	100	3	1000
450	1.1	4.4	TO 220	IRF843	7	125	4.9	1600
450	1.1	4.4	ISOWATT 220	IRF843FI	4	40	4.9	1600
450	0.85	4.4	TO 220	IRF841	8	125	4.9	1600
450	0.85	4.4	ISOWATT 220	IRF841FI	4.5	40	4.9	1600
450	0.7	4.5	TO 218	SGSP474	9	150	6	2100
450	0.7	4.5	TO 3	SGSP574	9	150	6	2100
450	0.5	7	TO 3	IRF453	11	150	8.7	3000
450	0.5	7.9	TO 218	IRFP453	12	180	9.3	3000
450	0.5	7.9	ISOWATT 218	IRFP453FI	8	70	9.3	3000
450	0.4	7.2	TO 3	IRF451	13	150	8.7	3000
450	0.4	7.9	TO 218	IRFP451	14	180	9.3	3000
450	0.4	7.9	ISOWATT 218	IRFP451FI	9	70	9.3	3000
450	0.1	28	ISOTOP	TSD4M451V	45	500	28	12000
500	8.5	0.6	SOT 82	SGSP239*	1.2	40	0.65	300
500	4	1.2	TO 220	BUZ74A	2	40	0.8	500
500	4	1.4	TO 220	IRF822	2.2	50	1	400
500	4	1.4	ISOWATT 220	IRF822FI	1.5	30	1	400
500	3.8	1.4	TO 220	SGSP319	2.8	75	0.8	380
500	3	1.2	TO 220	BUZ74	2.4	40	0.8	500
500	3	1.4	TO 220	IRF820	2.5	50	1	400
500	3	1.4	ISOWATT 220	IRF820FI	2	30	1	400
500	2	2.5	TO 220	BUZ42	4	75	1.5	2000
500	2	2.5	TO 220	IRF832	4	74	2.7	800
500	2	2.5	ISOWATT 220	IRF832FI	2.5	35	2.7	800
500	1.5	2.5	TO 220	BUZ41A	4.5	75	1.5	2000
500	1.5	2.5	TO 220	IRF830	4.5	74	2.7	800
500	1.5	2.5	ISOWATT 220	IRF830FI	3	35	2.7	800
500	1.5	2.5	TO 220	SGSP369	5	100	3	1000
500	1.1	4.4	TO 220	IRF842	7	125	4.9	1600
500	1.1	4.4	ISOWATT 220	IRF842FI	4	40	4.9	1600
500	0.85	4.4	TO 220	IRF 840	8	125	4.9	1600
500	0.85	4.4	ISOWATT 220	IRF840FI	4.5	40	4.9	1600
500	0.8	5.5	TO 218	BUZ354	8	125	2.7	4900
500	0.8	5	TO 3	BUZ45A	8.3	125	2.7	4900
500	0.7	4.5	TO 218	SGSP479	9	150	5	1900
500	0.7	4.5	TO 3	SGSP579	9	150	5	1900
500	0.6	5.5	TO 218	BUZ353	9.5	125	2.7	4900
500	0.6	5	TO 3	BUZ45	9.6	125	2.7	4900
500	0.5	7.2	TO 3	IRF452	11	150	8.7	3000
500	0.5	7.9	TO 218	IRFP452	12	180	9.3	3000
500	0.5	7.9	ISOWATT 218	IRFP452FI	8	70	9.3	3000
500	0.4	7.2	TO 3	IRF450	13	150	8.7	3000
500	0.4	7.9	TO 218	IRFP450	14	180	9.3	3000
500	0.4	7.9	ISOWATT 218	IRFP450FI	9	70	9.3	3000
500	0.2	15	TO 240	SGS30MA050D1	30	400	15	9100
500	0.16	17.5	TO 240	SGS35MA050D1	35	400	15	12000
500	0.1	28	ISOTOP	TSD4M450V	45	500	28	12000
600	2.5	1.5	TO 220	MTP3N60	3	75	1.5	1000
600	2.5	1.5	ISOWATT 220	MTP3N60FI	2.5	35	1.5	1000
600	1.2	3	ISOWATT 218	MTH6N60FI	3.5	40	2	1800
600	1.2	3	TO 220	MTP6N60	6	125	2	1800
800	2	2	TO 218	STHV82	5.5	125	2	1000
1000	3.5	2	TO 218	STHV102	4.2	125	2	1200
1000	0.7	9	ISOTOP	TSD5MG40V	17	500	5	6000

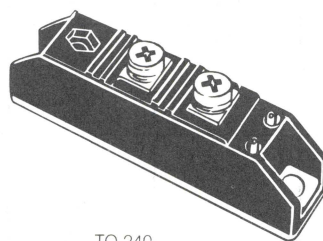
* Also available in SOT 194 package for SMD.

HIMOS (IGBT)

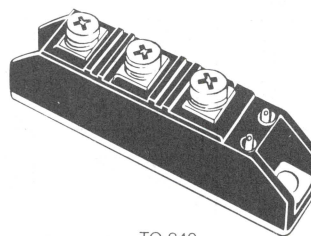
V _{(BR) DSS} (V)	V _{DS (on)} max (Ω)	@ I _D (A)	Package	Type	I _D max (A)	P _{tot} (W)	g _{fs} min (mho)	C _{iss} max (pF)
500	2.7	7	TO 220	STHI07N50FI	7	100	2.5	950
500	2.7	7	ISOWATT 220	STHI07N50	7	35	2.5	950
500	2.7	10	TO 220	STHI10N50	10	100	2.5	950
500	2.7	10	ISOWATT 220	STHI10N50FI	10	35	2.5	950

POWER MODULES

BIPOLAR IN TO 240

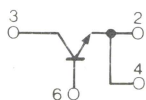


TO 240
Quarter bridge

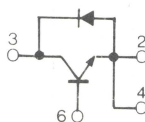


TO 240
Half bridge

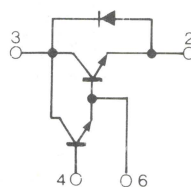
Internal schematic diagrams



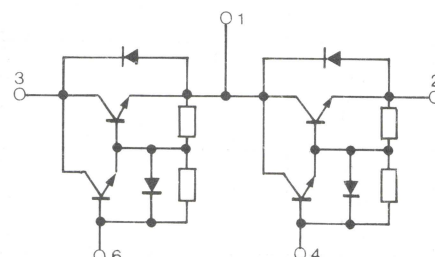
QUARTER BRIDGE TRANSISTOR
(1)



QUARTER BRIDGE TRANSISTOR
plus freewheel diode
(2)



QUARTER BRIDGE DARLINGTON
plus freewheel diode
(3)



HALF BRIDGE DARLINGTON
plus freewheel diode
(4)

I_C (A)	V_{CBO} (V)	V_{CEO} (V)	P_{tot} (W)	Package	Type	Internal schematic diagram	$V_{CE(sat)}$ @ I_C		I_B	t_r	t_s^*	t_f^*
							(V)	(A)	(mA)	max (μs)	max (μs)	max (μs)
37	1000	700	300	TO 240	SGS 25 DB 070 D	4	3	25	2.5	—	5	1.5
37	1200	800	300	TO 240	SGS 25 DB 080 D	4	3	25	2.5	—	5	1.5
45	500	400	300	TO 240	SGS 30 DB 040 D	4	3	30	2	—	3	0.7
45	600	450	300	TO 240	SGS 30 DB 045 D	4	3	30	2	—	3	0.7
45	1000	600	300	TO 240	SGS 30 DA 060 D	3	2.5	30	1.5	—	6	0.8
45	1200	700	300	TO 240	SGS 30 DA 070 D	3	2.5	30	1.5	—	6	0.8
50	1000	700	—	TO 240	SGS 35 DB 070 D	4	3	35	2	—	1.9	0.35 §
50	1200	800	—	TO 240	SGS 35 DB 080 D	4	3	35	2	—	1.9	0.35 §
60	850	450	300	TO 240	SGS 40 TA 045	1	2	40	8	—	5	0.5
60	850	450	300	TO 240	SGS 40 TA 045 D	2	2	40	8	—	5	0.5
75	500	400	300	TO 240	SGS 50 DB 040 D	4	3	50	5	—	3	0.7
75	600	450	300	TO 240	SGS 50 DB 045 D	4	3	50	5	—	3	0.7
75	850	450	300	TO 240	SGS 50 DA 045 D	3	2.5	50	2	—	5	0.6
90	1000	600	—	TO 240	SGS 60 DA 060 D	3	3	60	2	—	2.2	0.4 §
90	1200	700	—	TO 240	SGS 60 DA 070 D	3	3	60	2	—	2.2	0.4 §
120	300	200	300	TO 240	SGS 80 DA 020 D	3	2	80	1	—	4	0.6
150	300	250	300	TO 240	SGS 100 DA 025 D	3	2	100	1	—	4	0.6

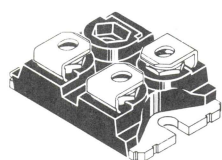
* $T_j = 125^\circ C$.

§ : Typical value.

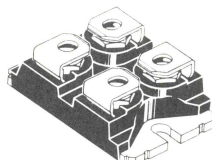
POWER MODULES

BIPOLAR IN ISOTOP

ISOTOP : Standard version

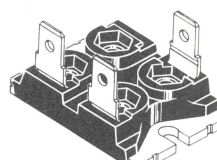


Bipolar transistors

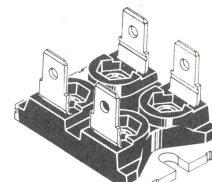


Darlingtons

ISOTOP : Faston version

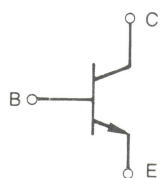
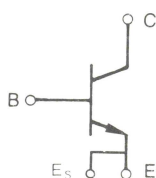
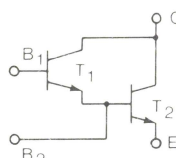
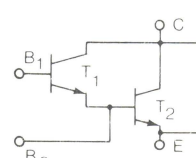


Bipolar transistors



Darlingtons

Internal schematic diagrams


BIPOLAR TRANSISTORS
(1)

BIPOLAR TRANSISTORS
(2)

DARLINGTONS
(3)

DARLINGTONS
plus freewheel diode
(4)

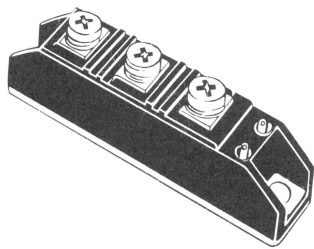
I_C	V_{CBO} V_{CEV}^*	V_{CEO}	P_{tot}	Type	Internal schematic diagram	$V_{CE(sat)}$ @	I_C	I_B	$t_d + t_r$	t_{si} t_s^*	t_{fi} t_f^*
(A)	(V)	(V)	(W)	See NOTE		max (V)	(A)	(A)	max (μs)	max (μs)	max (μs)
22	1000	450	125	ESM 3045 AV	3	1.3 typ	18	0.72	—	4.5	0.5
24	600	450	125	• ESM 3045 DV	4	1.4 typ	20	1.2	—	4	0.4
30	1000	450	150	BUV 98 AV	1	1.5	16	3.2	1	5 *	0.4*
30	1200	600	150	BUV 98 BV	1	2.5	30	1	1	6	0.6
30	1200	700	150	BUV 98 CV	1	3	20	8	1	6	0.6
36	1000	450	150	• ESM 4045 AV	3	1.3 typ	30	1.2	—	5	0.6
42	600	450	150	• ESM 4045 DV	4	1.4 typ	35	2	—	4.5	0.5
60	600	450	175	• ESM 5045 DV	4	1.4 typ	50	2.8	—	5	0.5
60	1000	450	250	BUV 298 AV	1	1.2	32	6.4	—	4.5	0.4
67	400	300	150	• ESM 2030 DV	4	1.5 typ	56	1.6	—	3	0.6
72	1000	450	250	• ESM 6045 AV	3	1.3 typ	60	2.4	—	6	0.6
80	400	300	250	BUT 32 V	1	0.9	40	4	—	3	0.4
90	850*	450	300	BUF 460 V	1	0.5 typ	30	3	—	2 *	0.1*
90	1000*	450	300	BUF 460 AV	1	0.5 typ	30	3	—	2 *	0.1*
94	600	450	250	• ESM 6045 DV	4	1.35 typ	70	4	—	5.5	0.5
100	200	125	250	BUT 30 V	1	0.9	100	10	—	2	0.2
100	400	300	225	• ESM 3030 DV	4	1.5 typ	85	2.4	—	3.5	0.6
120	150	125	175	• ESM 2012 DV	4	1.5 typ	100	1	—	2	0.3

For switching times, $T_j = 100^\circ C$.

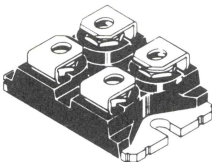
NOTE : FASTON VERSION - Without final «V» in the sales type.

• Darlingtons.

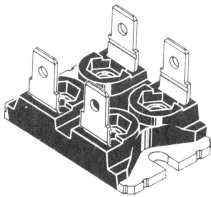
POWER MODULES



TO 240

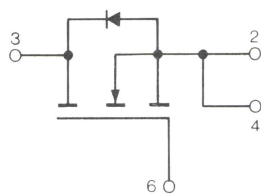


ISOTOP :
Standard version



ISOTOP :
Faston version

Internal schematic diagram



POWER MOS IN TO 240

$V_{(BR) DSS}$ \ (V)	$R_{DS (on)}$ max (Ω)	@ I_D (A)	Type	I_D max (A)	P_{tot} (W)	g_{fs} min (mho)	C_{iss} max (pF)
100	0.014	50	SGS100MA010D1	120	400	20	11200
100	0.009	75	SGS150MA010D1	150	400	20	14000
500	0.20	15	SGS30MA050D1	30	400	15	9100
500	0.16	17.5	SGS35MA050D1	35	400	15	12000

POWER MOS «ISOFET» IN ISOTOP

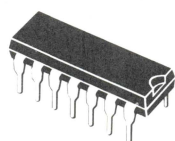
$V_{(BR) DSS}$ (V)	$R_{DS (on)}$ max (Ω)	@ I_D (A)	Type See NOTE	I_D max (A)	P_{tot} (W)	g_{fs} min (mho)	C_{iss} max (pF)
100	0.014	70	TSD4M150V	135	500	20	11200
200	0.021	60	TSD4M250V	110	500	28	12000
350	0.075	30	TSD4M351V	50	500	28	12000
400	0.075	30	TSD4M350V	50	500	28	12000
450	0.1	28	TSD4M451V	45	500	28	12000
500	0.1	28	TSD4M450V	45	500	28	12000
1000	0.7	9	TSD5MG40V	17	500	5	6000

NOTE : FASTON VERSION - Without final «V» in the sales type.

SMALL SIGNAL TRANSISTORS

We have a range of small signal silicon transistors to cover a wide variety of applications demanded by the industrial, instrumentation, telecommunication as well as military and space markets.

For more details see chapter «TELECOM AND DATA COMMUNICATIONS».



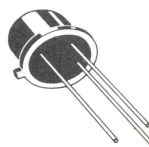
DIP 14



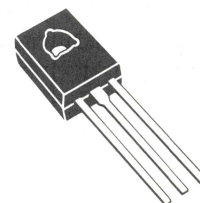
TO 18
(CB-6)



TO 72
(CB-4)



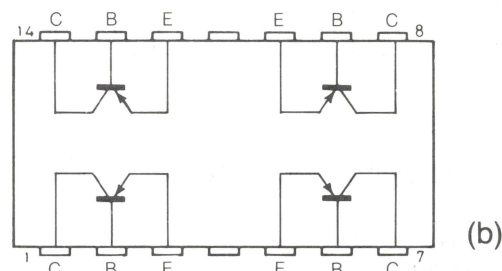
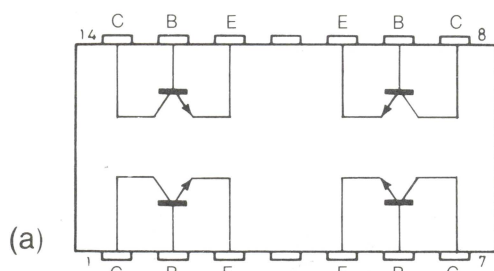
TO 39
(CB-7)



TO 126/SOT 32

QUAD SMALL SIGNAL TRANSISTORS

These devices offer all the performance of discrete small signal transistors in a package which is compatible with automatic insertion equipment. They may be used as effective input buffers, level shifters and current boosters to drive high fan out loads, LEDs, relays and other peripheral loads from boards of logic circuitry.



QUAD SILICON TRANSISTORS IN DUAL IN LINE PLASTIC PACKAGE

Type	Polarity	P _D (W)	V _{CB0} (V)	V _{CEO} (V)	I _C (mA)	h _{FE} min	and V _{CEsat} max (V)	@ I _C (mA)	f _T min (MHz)	Package	Connections
MPQ2222	NPN	1.9	60	40	500	100	0.4	150	200	DIP-14	(A)
MPQ2907	PNP	1.9	60	40	600	100	0.4	150	200	DIP-14	(B)

SMALL SIGNAL TRANSISTORS

TRANSISTORS FOR RADIO FREQUENCY APPLICATIONS

Polar.	Max ratings			Type	Main function	Trans. Freq.		Noise figure			Gain		Package
	V _{CEO} (V)	I _C (mA)	P _{tot} (mW)			f _T (MHz)	@ I _C (mA)	NF (dB)	@ I _C (mA)	/ f (MHz)	P _G (dB)	@ f (MHz)	
PNP	35	20		BFR 38	VHF/UHF amplifier	1000	3	3.5	3	800	14	800	TO 72
PNP	35	20	200	BF 272A	UHF amp.	850	3	3.5	3	800	15	800	TO 72
NPN	25	25	175	BF 173	Video IF amp	1000 typ	5	—	—	—	25 typ	35	TO 72
NPN	15	40	200	2N 2857	VHF/UHF amplifier/osc	1200	5	3.8	1.5	450	16	450	TO 72
NPN	15	40	200	2N 3839	VHF/UHF amplifier/osc	1400	5	3	1.5	450	17	450	TO 72
NPN	12	50	200	2N 5179	VHF amplifier/osc	1400	5	3	1.5	200	21	200	TO 72
NPN	15	50	200	BFX 89	UHF amplifier	1200	25	5	2	500	12	500	TO 72
PNP	25	50	225	BFR 99A	UHF amplifier	1400	10	5	3	800	10	800	TO 72
PNP	25	50	225	BFR 99	UHF amplifier	2000	10	3.5	3	800	12	800	TO 72
NPN	25	150	700	BFW 16A	CATV-MATV amplifier	1200	150	6	30	200	6.5	800	TO 39
NPN	25	150	700	BFX 17A	CATV-MATV amplifier	1100	150	—	—	—	16	200	TO 39
NPN	20	500	3500	2N 4427	VHF power amp.	500	50	—	—	—	10	175	TO 39
NPN	30	500	3500	2N 3866	UHF/VHF power amp.	500	50	—	—	—	10	400	TO 39

NPN GENERAL PURPOSE TRANSISTORS - TO 18

V _{CEO} V _{CER} * (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C (mA)	f _T min (MHz)	t _s (ns)	P _{tot} (mW)	Also available		
55	50/—	50	BSX 33	0.3	150	60	800	500	
25	75/260	100	BC 377	0.7	500	300 typ.	—	375	
40	75/260	100	BC 378	0.7	500	300 typ.	—	375	
30	100/300	150	2N 2222	1.6	500	250	225	500	2N 2221
40	100/300	150	2N 2222A	1	500	250	225	500	2N 2221A
50*	100/300	150	2N 956	1.5	150	70	—	500	2N 718A
55	60/180	150	BFR 18	0.25	150	60	—	500	
80	40/—	150	2N 720A	5	150	50	—	500	
80	100/300	150	2N 3700	0.5	500	100 typ.	—	500	2N 3302

SMALL SIGNAL TRANSISTORS

NPN GENERAL PURPOSE TRANSISTORS - TO 39

V_{CE0} V_{CER}^* (V)	h_{FE} min/max	@ I_C (mA)	Type	$V_{CE(sat)}$ max (V)	@ I_C (mA)	f_T min (MHz)	t_s t_{off}^* (ns)	P_{tot} (mW)	Also available
40 60	40/250 40/250	100 100	BC 140 BC 141	0.35 typ. 0.35 typ.	500 500	50 50	850* 850*	800 800	h_{FE} groups -6, -10, -16
30 30 35 40 40 50* 50* 55 60 60 65 80 80 80	40/— 100/300 30/— 50/250 100/300 40/120 100/300 40/120 40/120 100/300 40/120 40/120 40/120 100/300	150 150 150 150 150 150 150 150 150 150 150 150 150 150	BFY 51 2N 2219 BFY 50 2N 3053 2N 2219A 2N 1613 2N 1711 BFY 56A 2N 3108 2N 3107 2N 2102 2N 1893 2N 3020 2N 3019	0.35 1.6 0.2 1.4 1 1.5 1.5 0.25 1.4 1.4 0.5 5 0.5 0.5	150 500 150 150 500 150 150 150 150 150 150 150 500 500	50 250 60 100 typ. 250 60 70 60 100 typ. 100 typ. 60 50 80 typ. 100 typ.	160 typ. 225 140 typ. — 225 — — 800* — — 30* — — —	800 800 800 800 800 800 800 800 800 800 1000 800 800 800	BFY 52 2N 2218 2N 2218A BFY 56 2N 3110 2N 3109
40 50 60 75	40/240 40/250 40/240 30/130	500 500 500 500	BC 440 2N 5321 BC 441 2N 5320	1 0.8 1 0.5	1000 500 1000 500	50 50 50 50	— 800* — 800*	1000 1000 1000 1000	

PNP GENERAL PURPOSE TRANSISTORS - TO 18

V_{CE0} (V)	h_{FE} min/max	@ I_C (mA)	Type	$V_{CE(sat)}$ max (V)	@ I_C (mA)	f_T min (MHz)	t_s t_{off}^* (ns)	P_{tot} (mW)	Also available
30 40 40 40 45	90/— 50/— 100/300 150/300 100/600	10 10 10 10 10	BFX 48 BCY 70 2N 3251 2N 4035 BCY 71	0.3 0.5 0.5 0.3 0.5	50/5 50/5 50/5 50/5 50/5	400 250 300 450 200	160* 350 200 150* —	360 350 360 360 350	2N 3250 BCY 72
40 45 60 60	100/300 100/300 40/120 100/300	150 150 150 150	2N 2907 2N 3504 2N 2906A 2N 2907A	0.4 0.4 0.4 0.4	150/15 150/15 150/15 150/15	200 200 200 200	80 40 80 80	400 400 400 400	2N 3505 2N 2906

SMALL SIGNAL TRANSISTORS

PNP GENERAL PURPOSE TRANSISTORS - TO 39

V _{CEO} (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C /I _B (mA)	f _T min (MHz)	t _s t _{off} * (ns)	P _{tot} (mW)	Also available		
55	85/—	100	BFX 38	0.5	500/50	100	350	800	BFX 39 2N 4031/2
75	40/—	100	BFX 41	0.5	500/50	100	350	800	
75	85/—	100	BFX 40	0.5	500/50	100	350	800	
80	100/300	100	2N 4033	0.5	500/50	150	350	800	
40	50/250	150	2N 4037	0.3	150/15	100	110	700	2N 2904
40	100/230	150	2N 2905	0.4	150/15	200	80	600	
60	40/120	150	2N 2904A	0.4	150/15	200	80	600	
60	100/300	150	2N 2905A	0.4	150/15	200	80	600	
65	40/140	150	2N 4036	0.65	150/15	60	700*	1000	
40	40/250	500	BC 460	1	1000/100	50	—	1000	2N 5323
60	40/250	500	BC 461	1	1000/100	50	—	1000	
75	30/130	500	2N 5322	0.7	500/50	50	1000*	1000	
60	40/120	100	2N 4030	0.5	500/50	100	350	800	
40	40/250	100	BC 160	0.35 typ.	500/50	50	600*	650	
60	40/250	100	BC 161	0.35 typ.	500/50	50	600*	650	

NPN TRANSISTORS FOR LOW LEVEL, LOW NOISE APPLICATIONS - TO 18

V _{CEO} (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C /I _B (mA)	f _T min (MHz)	NF (dB)	P _{tot} (mW)	Also available		
45	100/500	0.01	2N 930	1	10/0.5	30	3	300	2N 2483
60	100/500	0.01	2N 2484	0.35	1/0.1	60	3	360	
60	130/—	0.01	BFR 17	0.35	1/0.1	70	3	360	
60	150/300	1	BFY 76	0.35	1/0.1	100	3	360	
20	110/800 (1)	2	BC 108	0.6	100/5	100	10	300	BCY 58
20	200/800 (1)	2	BC 109	0.6	100/5	100	4	300	
45	110/450 (1)	2	BC 107	0.6	100/5	100	10	300	
45	120/630	2	BCY 59	0.7	100/2.5	100	6	360	

(1) h_{FE} @ KHz.

SMALL SIGNAL TRANSISTORS

PNP TRANSISTORS FOR LOW LEVEL, LOW NOISE APPLICATIONS - TO 18

V _{CEO} (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C /I _B (mA)	f _T min (MHz)	NF (dB)	P _{tot} (mW)	Also available		
45	250/500	0.01	2N 3964	0.25	10/0.5	50	2	360	2N 3965
80	70/230	0.01	BFX 37	0.4	50/5	40	3.5	360	
80	100/300	0.01	2N 3963	0.25	10/0.5	40	3	360	2N 3962
25	125/500 (1)	2	BC 178	0.25	50/5	200 typ.	10	300	BC 179
45	120/460	2	BCY 79	0.8	100/2.5	180 typ.	6	390	BCY 78
45	125/500 (1)	2	BC 177	0.25	50/5	200 typ.	10	300	
50	110/450	2	BC 478	0.25	50/5	150 typ.	6	360	BC 479
80	110/250	2	BC 477	0.25	50/5	150 typ.	10	360	

 (1) h_{FE} @ 1KHz

HIGH VOLTAGE TRANSISTORS

Polarity	V _{CEO} (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C /I _B (mA)	f _T min (MHz)	P _{tot} (mW)	Package		
PNP	150	40/—	10	BFW 43	0.5	10/1	60	400	TO 18
NPN	180	30/—	10	BC 394	0.3	10/1	50	400	
PNP	180	50/—	10	BC 393	0.3	10/1	50	400	
NPN	200	40/—	30	BSS 72S	0.5	50/5	200	500	TO 39
PNP	200	40/250	30	BSS 75S	0.4	30/3	200	500	
PNP	150	40/—	10	BFW 44	0.5	10/1	60	700	
PNP	180	80/300	10	BFX 91	0.25	10/1	40	700	
PNP	180	80/300	10	2N 3931	0.25	10/1	60	700	
PNP	200	30/150	10	2N 5415	2.5	50/5	15	1000	
NPN	250	25/—	30	BF 258	1	30/6	90 typ.	1000	
NPN	150	30/—	30	2N 3114	1	50/5	40	800	
NPN	250	30/—	30	BF 458	1	50/10	90 typ.	1250	TO 126
NPN	300	30/—	30	BF 459	1	50/10	90 typ.	1250	

SMALL SIGNAL TRANSISTORS

NPN TRANSISTORS FOR FAST AND ULTRA FAST SWITCHING

V _{CEO} (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C /I _B (mA)	f _T min (MHz)	t _s t _{off} * (ns)	P _{tot} (mW)	Package		
12	30/120	10	BSX 28	0.25	30/3	400	13	360	TO 18
15	30/120	10	2N 708	0.4	10/1	300	75*	360	
15	30/120	10	2N 914	0.7	200/20	300	20	360	
15	40/120	10	BSX 20	0.6	100/10	450	13	360	
15	40/120	10	2N 2369	0.25	10/1	500	13	360	
15	40/120	10	2N 2369A	0.2	10/1	500	13	360	
15	30/120	30	BSX 26	0.5	300/30	350	18	360	
20	30/120	30	2N 3014	0.18	100/10	350	18	360	
20	40/120	30	BSX 39	0.28	100/10	350	18	360	
15	25/—	100	2N 3013	0.5	300/30	350	18	360	
30	60/150	100	2N 4013	0.20	100/10	300	60*	500	
30	30/120	150	2N 2845	0.4	150/15	350	40*	360	
40	60/150	100	BSX 32	0.5	500/50	300	60*	800	TO 39
50	60/150	100	2N 3725	0.52	500/50	300	60*	800	

PNP TRANSISTORS FOR FAST AND ULTRA FAST SWITCHING

V _{CEO} (V)	h _{FE} min/max @ I _C (mA)	Type	V _{CE(sat)} max (V) @ I _C /I _B (mA)	f _T min (MHz)	t _{off} (ns)	P _{tot} (mW)	Package	
12	30/120	30	BSX 29	0.2	30/3	400	90	TO 18
12	40/120	30	2N 2894	0.2	100/10	400	90	
20	30/120	30	2N 3209	0.2	30/3	400	90	

GLASS SCHOTTKY DIODES



DO 35



DO 41

Type	V _{RRM} (V)	I _F I _O * (mA)	I _R (1) max (μ A)	V _R (V)	V _F (1) / max (V)	I _F (mA)	C max (pF)	V _R (V)	Dynamic parameters	Package
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UHF and ultra fast switching

T_{amb} = 25°C

BAT 19	4	30	0.25	3	0.6	10	1	1	F = 6 dB / 1 GHz	DO 35
BAT 29	5	30	0.05	1	0.55	10	1	0	Q _S < 3 pC /10 mA	
BAT 19	10	30	0.1	5	0.4	1	1.2	0	τ < 100 ps /20 mA	
BAT 45	15	30	0.1	6	0.5	10	1.1	1	t _{rr} < 1 ns / 3 mA	
BAT 10 (1N 5712)	20	35	0.1	15	0.41	1	1.2	0	τ < 100 ps / 5 mA	
BAT 11	15	20	0.1	8	0.41	1	1.2	0	τ < 100 ps / 5 mA	
BAT 28 (1N 5711)	70	15	0.2	50	0.41	1	2	0	τ < 100 ps / 5 mA	
1N 6263	60	15	0.2	50	0.41	1	2.2	0	τ < 100 ps / 5 mA	

general purpose

T_{amb} = 25°C

BAT 42	30	200	0.5	25	0.4 0.65 1	10 50 200	7	§	1	t _{rr} < 5 ns /10 mA	DO 35
BAT 43	30	200	0.5	25	0.45 1	15 200	7	§	1	η > 80 % /45 MHz	
BAT 47	20	350	4	10	0.25 0.4 1	0.1 10 300	12	§	1	t _{rr} < 10 ns /10 mA	
BAT 48	40	350	2	10	0.25 0.4 0.9	0.1 10 500	12	§	1	t _{rr} < 10 ns /10 mA	
BAT 41	100	100	0.1	50	0.45 1	1 200	2	§	1		
BAT 46	100	150	2	50	0.25 0.45 1	0.1 10 250	6	§	1		
BAT 49	80	1000	200	80	0.32 0.42 1	10 100 1000	120	§	0		DO 41
BYV 10-20A (1N 5817)	20	1000*	300	20	0.45 0.75	1000 3000	330	§	0		
BYV 10-20	20	1000*	500	20	0.55 0.85	1000 3000	220	§	0		
BYV 10-30 (1N 5818)	30	1000*	500	30	0.55 0.85	1000 3000	220	§	0		
BYV 10-40 (1N 5819)	40	1000*	500	40	0.55 0.85	1000 3000	220	§	0		
BYV 10-60	60	1000*	500	60	0.70 1	1000 3000	150	§	0		

F : Mixer noise figure.

Q_S : Stored charges (B-line).

 η : Detection efficiency.

 τ : Minority carrier life time (Krakauer method).

(1) Pulse test t_p ≤ 300 μ s δ < 2%.

§ Typical value.

ZENER DIODES



LOW LEAKAGE, LOW IMPEDANCE, LOW NOISE ZENER DIODES

Type	V_{ZT} / I_{ZT} nom (V) (1)	I_{ZT} (μA)	r_{ZT} / I_{ZT} (Ω) (2)	I_R (μA)	V_R (V)	Noise Density @ 250 μA max ($\mu V / \sqrt{Hz}$)	I_{ZM} (mA)	Package
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250 mW / $T_{amb} = 25^\circ C$ T_j max = $200^\circ C$

$V_F \leq 1 V$ ($T_{amb} = 25^\circ C$, $I_F = 0.2 A$)

1N 4614	1.8	250	1200	7.5	1.0	1.0	120	DO 35
1N 4615	2.0	250	1250	5.0	1.0	1.0	110	
P 1N 4616	2.2	250	1300	4.0	1.0	1.0	100	
1N 4617	2.4	250	1400	2.0	1.0	1.0	95	
1N 4618	2.7	250	1500	1.0	1.0	1.0	90	
1N 4619	3.0	250	1600	0.8	1.0	1.0	85	
P 1N 4620	3.3	250	1650	7.5	1.5	1.0	80	
P 1N 4621	3.6	250	1700	7.5	2.0	1.0	75	
P 1N 4622	3.9	250	1650	5.0	2.0	1.0	70	
P 1N 4623	4.3	250	1600	4.0	2.0	1.0	65	
P 1N 4624	4.7	250	1550	10	3.0	1.0	60	
P 1N 4625	5.1	250	1500	10	3.0	2.0	55	
1N 4626	5.6	250	1400	10	4.0	4.0	50	
1N 4627	6.2	250	1200	10	5.0	5.0	45	
1N 4099	6.8	250	200	10	5.2	40	35	
1N 4100	7.5	250	200	10	5.7	40	31.8	
1N 4101	8.2	250	200	1.0	6.3	40	29.0	
1N 4102	8.7	250	200	1.0	6.7	40	27.4	
1N 4103	9.1	250	200	1.0	7.0	40	26.2	
1N 4104	10	250	200	1.0	7.6	40	24.8	
1N 4105	11	250	200	0.05	8.5	40	21.6	
1N 4106	12	250	200	0.05	9.2	40	20.4	
1N 4107	13	250	200	0.05	9.9	40	19.0	
1N 4108	14	250	200	0.05	10.7	40	17.5	
1N 4109	15	250	100	0.05	11.4	40	16.3	
1N 4110	16	250	100	0.05	12.2	40	15.4	
1N 4111	17	250	100	0.05	13.0	40	14.5	
1N 4112	18	250	100	0.05	13.7	40	13.2	
1N 4113	19	250	150	0.05	14.5	40	12.5	
1N 4114	20	250	150	0.01	15.2	40	11.9	
1N 4115	22	250	150	0.01	16.8	40	10.8	
1N 4116	24	250	150	0.01	18.3	40	9.9	
1N 4117	25	250	150	0.01	19.0	40	9.5	
1N 4118	27	250	150	0.01	20.5	40	8.8	
1N 4119	28	250	200	0.01	21.3	40	8.5	
1N 4120	30	250	200	0.01	22.8	40	7.9	
1N 4121	33	250	200	0.01	25.1	40	7.2	
1N 4122	36	250	200	0.01	27.4	40	6.6	
1N 4123	39	250	200	0.01	29.7	40	6.1	
1N 4124	43	250	250	0.01	32.7	40	5.5	
1N 4125	47	250	250	0.01	35.8	40	5.1	
1N 4126	51	250	300	0.01	38.8	40	4.6	
1N 4127	56	250	300	0.01	42.6	40	4.2	
1N 4128	60	250	400	0.01	45.6	40	4.0	
1N 4129	62	250	500	0.01	47.1	40	3.8	
1N 4130	68	250	700	0.01	51.7	40	3.5	
1N 4131	75	250	700	0.01	57.0	40	3.1	
1N 4132	82	250	800	0.01	62.4	40	2.9	
1N 4133	87	250	1000	0.01	66.2	40	2.7	
1N 4134	91	250	1200	0.01	69.2	40	2.6	
1N 4135	100	250	1500	0.01	76.0	40	2.3	

(1) Tolerance on nominal V_{ZT} value : $\pm 5\%$.

(2) Measured @ DC test current with 10% AC superimposed (50 Hz).

P : Preferred voltages.

ZENER DIODES

LOW VOLTAGE AVALANCHE ZENER DIODES
400 mW / $T_{amb} = 25^{\circ}\text{C}$ $T_j \text{ max} = 175^{\circ}\text{C}$

general purpose series

Type	V_{ZT} / I_{ZT} nom (V) (1) (2) (4)	I_{ZT} (mA)	r_{ZT} / I_{ZT} (Ω) (5)	I_R / V_R (μA) (V)	Noise Density @ 250 μA max ($\mu\text{V}/\sqrt{\text{Hz}}$) (7)	Package
T-LVA 47A	4.7	10	15	4.0	2.0	DO 35
T-LVA 51A	5.1	5	15	0.1	2.0	
P T-LVA 56A	5.6	1	40	0.05	3.0	
P T-LVA 62A	6.2	1	50	0.05	4.0	
P T-LVA 68A	6.8	1	50	0.05	5.0	
T-LVA 75A	7.5	1	100	0.01	6.0	
P T-LVA 82A	8.2	1	100	0.01	6.5	
T-LVA 91A	9.1	1	100	0.01	8.0	
T-LVA 100A	10.0	1	100	0.01	9.0	

high performance series

Type	V_{ZT} / I_{ZT}	I_{ZT}	r_{ZT} / I_{ZT}	$I_R \quad / \quad V_R$		Noise Density @ 250 μA	Maximum Regulation $I_{ZT} - I_{ZL}$		Package
	nom					max	ΔV_Z	I_{ZL}	
	(V)	(mA)	(Ω)	(μA)	(V)	($\mu V / \sqrt{Hz}$)	(V)	(mA)	
	(1) (2) (4)		(5)			(7)			
T-LVA 347A	4.7	10	10	2.0	2.0	1	0.50	1.0	DO 35
T-LVA 351A	5.1	5	10	2.0	3.0	1	0.30	0.25	
T-LVA 356A	5.6	1	40	2.0	4.5	1	0.10	0.05	
T-LVA 362A	6.2	1	45	0.5	5.6	1	0.10	0.01	
T-LVA 368A	6.8	1	50	0.05	6.2	1	0.10	0.01	
T-LVA 375A	7.5	1	50	0.01	6.8	1	0.10	0.01	
T-LVA 382A	8.2	1	60	0.01	7.5	1	0.10	0.01	
T-LVA 391A	9.1	1	60	0.01	8.2	2	0.10	0.01	
T-LVA 3100A	10.0	1	60	0.01	9.1	2	0.10	0.01	

high performance, low current series

Type	V_{ZT} @ 250 μA nom (V) (1) (3) (4)	r_{ZT} @ 250 μA max (Ω)	θ_{VZ} @ 250 μA nom (mV/ $^{\circ}\text{C}$) (6)	I_R @ 80 % V_Z max (μA)	Maximum Regulation			Noise Density @ 250 μA max ($\mu\text{V}/\sqrt{\text{Hz}}$) (7)	Typical Parameters			Package
					ΔV_Z (V)	I_{LO} (μA)	I_{Hi} (mA)		V_Z @ 10 μA (V)	I_R @ 50 % V_Z (nA)	I_R @ 90 % V_Z (nA)	
P T-LVA 450A	5.0	700	0.75	10.0	0.40	100	1.0	1	4.15	70	15000	DO 35
P T-LVA 453A	5.3	250	1.33	5.0	0.20	100	1.0	1	4.9	35	7000	
P T-LVA 456A	5.6	100	1.96	1.0	0.10	50	1.0	1	5.45	15	3000	
T-LVA 459A	5.9	100	2.30	0.5	0.10	10	1.0	1	5.85	2.5	1000	
P T-LVA 462A	6.2	100	2.67	0.1	0.10	10	1.0	1	6.2	0.8	130	
T-LVA 465A	6.5	100	3.06	0.05	0.10	10	1.0	1	6.5	0.15	25	
P T-LVA 468A	6.8	100	3.40	0.01	0.10	10	1.0	1	6.8	< 0.10	9.0	
T-LVA 471A	7.1	175	3.76	0.01	0.10	10	1.0	1	7.1	< 0.10	5.5	
T-LVA 474A	7.4	175	4.07	0.01	0.10	10	1.0	1	7.4	< 0.10	3.0	
T-LVA 477A	7.7	175	4.47	0.01	0.10	10	1.0	1	7.7	< 0.10	2.5	
T-LVA 480A	8.0	175	4.80	0.01	0.10	10	1.0	1	8.0	< 0.10	1.8	
T-LVA 483A	8.3	175	5.15	0.01	0.10	10	1.0	1	8.3	< 0.10	1.2	
T-LVA 486A	8.6	175	5.50	0.01	0.10	10	1.0	1	8.6	< 0.10	0.9	
T-LVA 489A	8.9	175	5.87	0.01	0.10	10	1.0	2	8.9	< 0.10	0.6	
T-LVA 492A	9.2	175	6.16	0.01	0.10	10	1.0	2	9.2	< 0.10	0.5	
T-LVA 495A	9.5	175	6.46	0.01	0.10	10	1.0	2	9.5	< 0.10	0.5	
P T-LVA 498A	9.8	175	6.86	0.01	0.10	10	1.0	2	9.8	< 0.10	0.4	

(1) For other voltages, consult the manufacturer.

(2) Tolerance on nominal V_{ZT} value : $\pm 5\%$.

(3) Tolerance on nominal V_{ZT} value : $\pm 0.2\text{ V}$.

(4) For other tolerances, consult the manufacturer.

(5) Measured @ DC test current with 10 % AC superimposed (50 Hz).

(6) Tolerance : $\pm 0.5\text{ mV}/^{\circ}\text{C}$, 0 to 100°C , at V_{ZT} nominal only.

(7) Noise measured at 1000 Hz with a Diode Noise Analyser
«Quan-tech» Model 327 - Bandpass 1000 Hz.

P : Preferred voltages.

ZENER DIODES

STANDARD ZENER DIODES

PREFERRED SERIES
PRO-ELECTRON SERIES
CECC APPROVAL

Type	V _{ZT} / I _{ZT} *		r _{ZT} / I _{ZT} *	I _{ZT} *	r _{ZK} / I _{ZK}		αVZ		I _R / V _R		V _R	I _{ZM}	I _{ZSM}	Package
	min	max			max	max	min	max	T _{amb} 25°C	T _{amb} 150°C				
	(V)		(Ω)	(mA)	(Ω)	(mA)	(10 ⁻⁴ /°C)		max	max	(V)	(mA)	(mA)	

500 mW / T_{amb} = 25°C T_j max = 175°C

V_F ≤ 1.5 V (T_{amb} = 25°C, I_F = 0.2A)

BZX 55 C 0V8 (1)	0.73	0.83	8	5	600	1								
P BZX 55 C 2V4	2.28	2.56	85	5	600	1	-8	-6	50	100	1	155	1720	
P BZX 55 C 2V7 CECCCL	2.5	2.9	85	5	600	1	-8	-6	10	50	1	135	1600	
• BZX 55 C 3V0 CECCCL	2.8	3.2	85	5	600	1	-8	-6	4	40	1	125	1500	
P BZX 55 C 3V3 CECCCL	3.1	3.5	85	5	600	1	-8	-5	2	40	1	115	1400	
P BZX 55 C 3V6 CECCCL	3.4	3.8	85	5	600	1	-8	-4	2	40	1	105	1330	
P BZX 55 C 3V9 CECCCL	3.7	4.1	85	5	600	1	-7	-3	2	40	1	95	1270	
P BZX 55 C 4V3 CECCCL	4.0	4.6	75	5	600	1	-4	-1	1	20	1	90	1220	
P BZX 55 C 4V7 CECCCL	4.4	5.0	60	5	600	1	-3	1	0.5	10	1	85	1160	
P BZX 55 C 5V1 CECCCL	4.8	5.4	35	5	550	1	-2	5	0.1	2	1	80	1100	
P BZX 55 C 5V6 CECCCL	5.2	6.0	25	5	450	1	-1	6	0.1	2	1	70	1040	
P BZX 55 C 6V2 CECCCL	5.8	6.6	10	5	200	1	0	7	0.1	2	2	64	980	
P BZX 55 C 6V8 CECCCL	6.4	7.2	8	5	150	1	1	8	0.1	2	3	58	900	
P BZX 55 C 7V5 CECCCL	7.0	7.9	7	5	50	1	1	9	0.1	2	5	53	810	
P BZX 55 C 8V2 CECCCL	7.7	8.7	7	5	50	1	1	9	0.1	2	6.2	47	760	
P BZX 55 C 9V1 CECCCL	8.5	9.6	10	5	50	1	2	10	0.1	2	6.8	43	670	
P BZX 55 C 10 CECCCL	9.4	10.6	15	5	70	1	3	11	0.1	2	7.5	40	600	
• BZX 55 C 11 CECCCL	10.4	11.6	20	5	70	1	3	11	0.1	2	8.2	36	550	
P BZX 55 C 12 CECCCL	11.4	12.7	20	5	90	1	3	11	0.1	2	9.1	32	500	
• BZX 55 C 13 CECCCL	12.4	14.1	26	5	110	1	3	11	0.1	2	10	29	450	
P BZX 55 C 15 CECCCL	13.8	15.6	30	5	110	1	3	11	0.1	2	11	27	380	
• BZX 55 C 16 CECCCL	15.3	17.1	40	5	170	1	3	11	0.1	2	12	24	350	
P BZX 55 C 18 CECCCL	16.8	19.1	50	5	170	1	3	11	0.1	2	13	21	300	
P BZX 55 C 20 CECCCL	18.8	21.2	55	5	220	1	3	11	0.1	2	15	20	270	
P BZX 55 C 22 CECCCL	20.8	23.3	55	5	220	1	3	11	0.1	2	16	18	250	
P BZX 55 C 24 CECCCL	22.8	25.6	80	5	220	1	4	12	0.1	2	18	16	225	
P BZX 55 C 27 CECCCL	25.1	28.9	80	5	220	1	4	12	0.1	2	20	14	200	
• BZX 55 C 30 CECCCL	28	32	80	5	220	1	4	12	0.1	2	22	13	190	
P BZX 55 C 33 CECCCL	31	35	80	5	220	1	4	12	0.1	2	24	12	175	
• BZX 55 C 36 CECCCL	34	38	80	5	220	1	4	12	0.1	2	27	11	160	
• BZX 55 C 39 CECCCL	37	41	90	2.5	500	0.5	4	12	0.1	5	30	10	148	
• BZX 55 C 43 CECCCL	40	46	90	2.5	600	0.5	4	12	0.1	5	33	9.2	135	
• BZX 55 C 47 CECCCL	44	50	110	2.5	700	0.5	4	12	0.1	5	36	8.5	123	
• BZX 55 C 51 CECCCL	48	54	125	2.5	700	0.5	4	12	0.1	10	39	7.8	113	
• BZX 55 C 56 CECCCL	52	60	135	2.5	1000	0.5	4	12	0.1	10	43	7.0	104	
• BZX 55 C 62 CECCCL	58	66	150	2.5	1000	0.5	4	12	0.1	10	47	6.4	93	
• BZX 55 C 68	64	72	200	2.5	1000	0.5	4	12	0.1	10	51	5.9	87	
P BZX 55 C 75	70	80	250	2.5	1500	0.5	4	12	0.1	10	56	5.3	79	
P BZX 55 C 82	77	87	300	2.5	2000	0.5	4	12	0.1	10	62	4.8	72	
• BZX 55 C 91	85	96	450	1	5000	0.1	4	12	0.1	10	68	4.4	65	
BZX 55 C 100	94	106	450	1	5000	0.1	4	12	0.1	10	75	4.0	59	
BZX 55 C 110	104	116	600	1	5000	0.1	4	12	0.1	10	82	3.6	54	
BZX 55 C 120	114	127	800	1	5000	0.1	4	12	0.1	10	91	3.3	49	
BZX 55 C 130	124	141	1000	1	5000	0.1	4	12	0.1	10	100	3.0	45	
BZX 55 C 150	138	156	1200	1	5000	0.1	4	12	0.1	10	110	2.6	39	
BZX 55 C 160	153	171	1500	1	5000	0.1	4	12	0.1	10	120	2.5	37	
BZX 55 C 180	168	191	1800	1	5000	0.1	4	12	0.1	10	130	2.2	33	
BZX 55 C 200	188	212	2000	1	5000	0.1	4	12	0.1	10	150	2.0	30	

DO 35

*Pulse test 20 ms ≤ t_p ≤ 50 ms δ < 2%.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

Tight tolerances on preferred voltages :

BZX 55 B : ± 2%.

BZX 55 A : ± 1%.

• ESA qualified product.

(1) BZX 55 C 0V8 is to be used with forward bias.

ZENER DIODES

STANDARD ZENER DIODES

Type	V_{ZT} / I_{ZT}^*		r_{ZT} / I_{ZT}	I_{ZT}	r_{ZK} / I_{ZK}		α_{VZ}		I_R / V_R T_{amb}		V_R	I_{ZM}	Package
	min	max	max		max		min	max	25°C max	150°C max	(V)	(mA)	
	(V)		(Ω)	(mA)	(Ω)	(mA)	(mV/°C)		(μA)				

500 mW / $T_{amb} = 25^\circ C$ T_j max = $175^\circ C$
 $V_F \leq 1 V$ ($T_{amb} = 25^\circ C$, $I_F = 50 mA$)

P BZX 79 C 2V7 CECCL	2.5	2.9	85	5	600	1	- 3.5	0	10	50	1	135	DO 35
BZX 79 C 3V0 CECCL	2.8	3.2	85	5	600	1	- 3.5	0	4	40	1	125	
P BZX 79 C 3V3 CECCL	3.1	3.5	85	5	600	1	- 3.5	0	2	40	1	115	
P BZX 79 C 3V6 CECCL	3.4	3.8	85	5	600	1	- 3.5	0	2	40	1	105	
P BZX 79 C 3V9 CECCL	3.7	4.1	85	5	600	1	- 3.5	0	2	40	1	95	
P BZX 79 C 4V3 CECCL	4.0	4.6	75	5	600	1	- 3.5	0	1	20	1	90	
P BZX 79 C 4V7 CECCL	4.4	5.0	60	5	500	1	- 3.5	+ 0.2	3	10	2	85	
P BZX 79 C 5V1 CECCL	4.8	5.4	35	5	480	1	- 2.7	+ 1.2	2	10	2	80	
P BZX 79 C 5V6 CECCL	5.2	6.0	25	5	400	1	- 2.0	+ 2.5	1	10	2	70	
P BZX 79 C 6V2 CECCL	5.8	6.6	10	5	150	1	0.4	3.7	3	10	4	64	
P BZX 79 C 6V8 CECCL	6.4	7.2	8	5	80	1	1.2	4.5	2	5	4	58	
P BZX 79 C 7V5 CECCL	7.0	7.9	7	5	50	1	2.5	5.3	0.1	5	5	53	
BZX 79 C 8V2 CECCL	7.7	8.7	7	5	50	1	3.2	6.2	0.1	2	5	47	
P BZX 79 C 9V1 CECCL	8.5	9.6	10	5	50	1	3.8	7.0	0.1	2	6	43	
P BZX 79 C 10 CECCL	9.4	10.6	15	5	70	1	4.5	8.0	0.1	2	7	40	
BZX 79 C 11 CECCL	10.4	11.6	20	5	70	1	5.4	9.0	0.1	2	8	36	
P BZX 79 C 12 CECCL	11.4	12.7	20	5	90	1	6.0	10.0	0.1	2	8	32	
BZX 79 C 13 CECCL	12.4	14.1	26	5	110	1	7.0	11.0	0.1	2	8	29	
P BZX 79 C 15 CECCL	13.8	15.6	30	5	110	1	9.2	13.0	0.1	2	10	27	
BZX 79 C 16 CECCL	15.3	17.1	40	5	170	1	10.4	14.0	0.1	2	11	24	
P BZX 79 C 18 CECCL	16.8	19.1	45	5	170	1	12.4	16.0	0.1	2	13	21	
P BZX 79 C 20 CECCL	18.8	21.2	55	5	220	1	14.4	18.0	0.1	2	14	20	
P BZX 79 C 22 CECCL	20.8	23.3	55	5	220	1	16.4	20.0	0.1	2	15	18	
P BZX 79 C 24 CECCL	22.8	25.6	70	5	220	1	18.4	22.0	0.1	2	17	16	
P BZX 79 C 27 CECCL	25.1	28.9	80	2	300	0.5	21.4	25.3	0.1	2	19	14	
BZX 79 C 30 CECCL	28	32	80	2	300	0.5	24.4	29.4	0.1	2	21	13	
P BZX 79 C 33 CECCL	31	35	80	2	325	0.5	27.4	33.4	0.1	2	23	12	
BZX 79 C 36 CECCL	34	38	90	2	350	0.5	30.4	37.4	0.1	2	25	11	
BZX 79 C 39 CECCL	37	41	130	2	350	0.5	33.4	41.2	0.1	2	27	10	
BZX 79 C 43 CECCL	40	46	150	2	375	0.5	37.6	46.6	0.1	2	30	9.2	
BZX 79 C 47 CECCL	44	50	170	2	375	0.5	42.0	51.8	0.1	2	33	8.5	
BZX 79 C 51 CECCL	48	54	180	2	400	0.5	46.6	57.2	0.1	2	36	7.8	
BZX 79 C 56 CECCL	52	60	200	2	425	0.5	52.2	63.8	0.1	2	39	7.0	
BZX 79 C 62 CECCL	58	66	215	2	450	0.5	58.8	71.6	0.1	2	43	6.4	

* Pulse test $t_p \leq 300 \mu s$ $\delta < 2\%$.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

ZENER DIODES

STANDARD ZENER DIODES

Type	V_{ZT} / I_{ZT}^*		r_{ZT} / I_{ZT}^*	I_{ZT}^*	r_{ZK} / I_{ZK}		α_{VZ}	I_R / V_R $T_{amb} 25^\circ C$	V_R	I_{ZM}	Package
	min (V)	max	max (Ω)	(mA)	max (Ω)	(mA)	typ ($10^{-4}/^\circ C$)	max (μA)	(V)	(mA)	

500 mW / $T_{amb} = 25^\circ C$ $T_j \text{ max} = 175^\circ C$ $V_F \leq 1 V (T_{amb} = 25^\circ C, I_F = 50 mA)$

P BZX 83 C 2V4	2.28	2.56	90	5	600	1	-7	120	1	155	DO 35
P BZX 83 C 2V7	2.5	2.9	90	5	600	1	-7	100	1	135	
BZX 83 C 3V0	2.8	3.2	90	5	600	1	-7	60	1	125	
P BZX 83 C 3V3	3.1	3.5	90	5	600	1	-6	30	1	115	
P BZX 83 C 3V6	3.4	3.8	90	5	600	1	-6	20	1	105	
P BZX 83 C 3V9	3.7	4.1	90	5	600	1	-5	10	1	95	
P BZX 83 C 4V3	4.0	4.6	80	5	600	1	-3	5	1	90	
P BZX 83 C 4V7	4.4	5.0	80	5	600	1	-1	2	1	85	
P BZX 83 C 5V1	4.8	5.4	60	5	550	1	1	1	1	75	
P BZX 83 C 5V6	5.2	6.0	40	5	450	1	3	1	1	70	
P BZX 83 C 6V2	5.8	6.6	10	5	200	1	4	1	2	64	
P BZX 83 C 6V8	6.4	7.2	8	5	150	1	5	1	3	58	
P BZX 83 C 7V5	7.0	7.9	7	5	50	1	5	1	3.5	53	
P BZX 83 C 8V2	7.7	8.7	7	5	50	1	6	1	4	47	
P BZX 83 C 9V1	8.5	9.6	10	5	50	1	6	1	5	43	
P BZX 83 C 10	9.4	10.6	15	5	70	1	7	1	6	40	
P BZX 83 C 11	10.4	11.6	20	5	70	1	7	1	8.2	36	
P BZX 83 C 12	11.4	12.7	20	5	90	1	7	1	9.1	32	
BZX 83 C 13	12.4	14.1	25	5	110	1	7	1	10	29	
P BZX 83 C 15	13.8	15.6	30	5	110	1	8	1	11	27	
BZX 83 C 16	15.3	17.1	40	5	170	1	8	1	12	24	
P BZX 83 C 18	16.8	19.1	55	5	170	1	8	1	13	21	
P BZX 83 C 20	18.8	21.2	55	5	220	1	8	1	15	20	
P BZX 83 C 22	20.8	23.3	58	5	220	1	8	1	16	18	
P BZX 83 C 24	22.8	25.6	80	5	220	1	8	1	18	16	
P BZX 83 C 27	25.1	28.9	80	5	250	1	9	1	20	14	
P BZX 83 C 30	28	32	90	5	250	1	9	1	22	13	
P BZX 83 C 33	31	35	90	5	250	1	9	1	24	12	
BZX 83 C 36	34	38	90	5	250	1	9	1	27	11	
BZX 83 C 39	37	41	100	2.5	600	0.5	9	1	30	10	
BZX 83 C 43	40	46	100	2.5	700	0.5	9	1	33	9.2	
BZX 83 C 47	44	50	120	2.5	1000	0.5	9	1	36	8.5	
BZX 83 C 51	48	54	135	2.5	1000	0.5	9	1	39	7.8	
BZX 83 C 56	52	60	150	2.5	1500	0.5	9	1	43	7.0	
BZX 83 C 62	58	66	170	2.5	1500	0.5	9	1	47	6.4	
BZX 83 C 68	64	72	215	2.5	2000	0.5	9	1	51	5.9	
BZX 83 C 75	70	80	250	2.5	2000	0.5	9	1	56	5.3	

* Pulse test $20 \text{ ms} \leq t_p \leq 50 \text{ ms}$ $\delta < 2\%$.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

ZENER DIODES

PREFERRED SERIES JEDEC SERIES

STANDARD ZENER DIODES

Type	V_{ZT} / I_{ZT}^*	r_{ZT} / I_{ZT}^*	I_{ZT}^*	r_{ZK} / I_{ZK}	α_{VZ}	I_R / V_R T_{amb} 25°C	V_R	I_{ZM} T_{amb} 75°C	Package
	nom (V)	max (Ω)	(mA)	max (Ω) (mA)	max (10 ⁻⁴ /°C)	max (μA)	(V)	(mA)	

500 mW / $T_{amb} = 75^\circ\text{C}$ $T_j \text{ max} = 200^\circ\text{C}$
 $V_F \leq 1.1 \text{ V} (T_{amb} = 25^\circ\text{C}, I_F = 0.2 \text{ A})$

P 1N 5221 B	2.4	30	20	1200	0.25	— 8.5	100	1.0	191	DO 35
1N 5222 B	2.5	30	20	1250	0.25	— 8.5	100	1.0	182	
P 1N 5223 B	2.7	30	20	1300	0.25	— 8.0	75	1.0	168	
1N 5224 B	2.8	30	20	1400	0.25	— 8.0	75	1.0	162	
1N 5225 B	3.0	29	20	1600	0.25	— 7.5	50	1.0	151	
P 1N 5226 B	3.3	28	20	1600	0.25	— 7.0	25	1.0	138	
P 1N 5227 B	3.6	24	20	1700	0.25	— 6.5	15	1.0	126	
P 1N 5228 B	3.9	23	20	1900	0.25	— 6.0	10	1.0	115	
P 1N 5229 B	4.3	22	20	2000	0.25	± 5.5	5	1.0	106	
P 1N 5230 B	4.7	19	20	1900	0.25	± 3.0	5	2.0	97	
P 1N 5231 B	5.1	17	20	1600	0.25	± 3.0	5	2.0	89	
P 1N 5232 B	5.6	11	20	1600	0.25	+ 3.8	5	3.0	81	
1N 5233 B	6.0	7.0	20	1600	0.25	+ 3.8	5	3.5	76	
P 1N 5234 B	6.2	7.0	20	1000	0.25	+ 4.5	5	4.0	73	
P 1N 5235 B	6.8	5.0	20	750	0.25	+ 5.0	3	5.0	67	
P 1N 5236 B	7.5	6.0	20	500	0.25	+ 5.8	3	6.0	61	
P 1N 5237 B	8.2	8.0	20	500	0.25	+ 6.2	3	6.5	55	
1N 5238 B	8.7	8.0	20	600	0.25	+ 6.5	3	6.5	52	
P 1N 5239 B	9.1	10	20	600	0.25	+ 6.8	3	7.0	50	
P 1N 5240 B	10	17	20	600	0.25	+ 7.5	3	8.0	45	
1N 5241 B	11	22	20	600	0.25	+ 7.6	2	8.4	41	
P 1N 5242 B	12	30	20	600	0.25	+ 7.7	1	9.1	38	
P 1N 5243 B	13	13	9.5	600	0.25	+ 7.9	0.5	9.9	35	
P 1N 5244 B	14	15	9.0	600	0.25	+ 8.2	0.1	10	32	
P 1N 5245 B	15	16	8.5	600	0.25	+ 8.2	0.1	11	30	
P 1N 5246 B	16	17	7.8	600	0.25	+ 8.3	0.1	12	28	
1N 5247 B	17	19	7.4	600	0.25	+ 8.4	0.1	13	27	
P 1N 5248 B	18	21	7.0	600	0.25	+ 8.5	0.1	14	25	
1N 5249 B	19	23	6.6	600	0.25	+ 8.6	0.1	14	24	
1N 5250 B	20	25	6.2	600	0.25	+ 8.6	0.1	15	23	
P 1N 5251 B	22	29	5.6	600	0.25	+ 8.7	0.1	17	21	
P 1N 5252 B	24	33	5.2	600	0.25	+ 8.8	0.1	18	19.1	
1N 5253 B	25	35	5.0	600	0.25	+ 8.9	0.1	19	18.2	
1N 5254 B	27	41	4.6	600	0.25	+ 9.0	0.1	21	16.8	
1N 5255 B	28	44	4.5	600	0.25	+ 9.1	0.1	21	16.2	
1N 5256 B	30	49	4.2	600	0.25	+ 9.1	0.1	23	15.1	
1N 5257 B	33	58	3.8	700	0.25	+ 9.2	0.1	25	13.8	
1N 5258 B	36	70	3.4	700	0.25	+ 9.3	0.1	27	12.6	
1N 5259 B	39	80	3.2	800	0.25	+ 9.4	0.1	30	11.5	
1N 5260 B	43	93	3.0	900	0.25	+ 9.5	0.1	33	10.6	
1N 5261 B	47	105	2.7	1000	0.25	+ 9.5	0.1	36	9.7	
1N 5262 B	51	125	2.5	1100	0.25	+ 9.6	0.1	39	8.9	
1N 5263 B	56	150	2.2	1300	0.25	+ 9.6	0.1	43	8.1	
1N 5264 B	60	170	2.1	1400	0.25	+ 9.7	0.1	46	7.6	
1N 5265 B	62	185	2.0	1400	0.25	+ 9.7	0.1	47	7.3	
1N 5266 B	68	230	1.8	1600	0.25	+ 9.7	0.1	52	6.7	
1N 5267 B	75	270	1.7	1700	0.25	+ 9.8	0.1	56	6.1	
1N 5268 B	82	330	1.5	2000	0.25	+ 9.8	0.1	62	5.5	
1N 5269 B	87	370	1.4	2200	0.25	+ 9.9	0.1	68	5.2	
1N 5270 B	91	400	1.4	2300	0.25	+ 9.9	0.1	69	5.0	
P 1N 5271 B	100	500	1.3	2600	0.25	+ 11.0	0.1	76	4.5	
P 1N 5272 B	110	750	1.1	3000	0.25	+ 11.0	0.1	84	4.1	
1N 5273 B	120	900	1.0	4000	0.25	+ 11.0	0.1	91	3.8	
1N 5274 B	130	1100	0.95	4500	0.25	+ 11.0	0.1	99	3.5	
1N 5275 B	140	1300	0.90	4500	0.25	+ 11.0	0.1	106	3.2	
1N 5276 B	150	1500	0.85	5000	0.25	+ 11.0	0.1	114	3.0	
1N 5277 B	160	1700	0.80	5500	0.25	+ 11.0	0.1	122	2.8	
1N 5278 B	170	1900	0.74	5500	0.25	+ 11.0	0.1	129	2.7	
1N 5279 B	180	2200	0.68	6000	0.25	+ 11.0	0.1	137	2.5	
1N 5280 B	190	2400	0.66	6500	0.25	+ 11.0	0.1	144	2.4	
1N 5281 B	200	2500	0.65	7000	0.25	+ 11.0	0.1	152	2.3	

* Measure under thermal equilibrium and DC current test conditions ($T_{amb} 25^\circ\text{C}$).

Tolerance on nominal V_{ZT} value : ± 5%.

P : Preferred voltages.

Tight tolerances on preferred voltages :

1N 52... C : ± 2%.

1N 52... D : ± 1%.

ZENER DIODES

STANDARD ZENER DIODES

PREFERRED SERIES JEDEC SERIES

Type	V_{ZT} / I_{ZT}^*	r_{ZT} / I_{ZT}^*	I_{ZT}^*	r_{ZK} / I_{ZK}		α_{VZ}	I_R / V_R T_{amb} 25°C	V_R	I_{ZM} T_{amb} 50°C	Package
	nom (V)	max (Ω)	(mA)	max (Ω)	(mA)	typ (10 ⁻⁴ /°C)	max (μA)	(V)	(mA)	

1 W / $T_{amb} = 50^\circ\text{C}$ $T_j \text{ max} = 200^\circ\text{C}$
 $V_F \leq 1.2 \text{ V}$ ($T_{amb} = 25^\circ\text{C}$, $I_F = 0.2 \text{ A}$)

P 1N 4728 A	3.3	10	76	400	1	- 6	100	1.0	276	DO 41
1N 4729 A	3.6	10	69	400	1	- 6	100	1.0	252	
P 1N 4730 A	3.9	9	64	400	1	- 5	50	1.0	234	
1N 4731 A	4.3	9	58	400	1	- 3	10	1.0	217	
P 1N 4732 A	4.7	8	53	500	1	- 1	10	1.0	193	
P 1N 4733 A	5.1	7	49	550	1	1	10	1.0	178	
P 1N 4734 A	5.6	5	45	600	1	3	10	2.0	162	
P 1N 4735 A	6.2	2	41	700	1	4	10	3.0	146	
P 1N 4736 A	6.8	3.5	37	700	1	5	10	4.0	133	
P 1N 4737 A	7.5	4	34	700	0.5	5	10	5.0	121	
P 1N 4738 A	8.2	4.5	31	700	0.5	6	10	6.0	110	
P 1N 4739 A	9.1	5	28	700	0.5	6	10	7.0	100	
P 1N 4740 A	10	7	25	700	0.25	7	10	7.6	91	
1N 4741 A	11	8	23	700	0.25	7	5	8.4	83	
P 1N 4742 A	12	9	21	700	0.25	7	5	9.1	76	
P 1N 4743 A	13	10	19	700	0.25	7	5	9.9	69	
P 1N 4744 A	15	14	17	700	0.25	8	5	11.4	61	
P 1N 4745 A	16	16	15.5	700	0.25	8	5	12.2	57	
P 1N 4746 A	18	20	14	750	0.25	8	5	13.7	50	
P 1N 4747 A	20	22	12.5	750	0.25	8	5	15.2	45	
P 1N 4748 A	22	23	11.5	750	0.25	8	5	16.7	41	
P 1N 4749 A	24	25	10.5	750	0.25	8	5	18.2	38	
P 1N 4750 A	27	35	9.5	750	0.25	9	5	20.6	34	
P 1N 4751 A	30	40	8.5	1000	0.25	9	5	22.8	30	
P 1N 4752 A	33	45	7.5	1000	0.25	9	5	25.1	27	
P 1N 4753 A	36	50	7.0	1000	0.25	9	5	27.4	25	
1N 4754 A	39	60	6.5	1000	0.25	9	5	29.7	23	
1N 4755 A	43	70	6.0	1500	0.25	9	5	32.7	22	
P 1N 4756 A	47	80	5.5	1500	0.25	9	5	35.8	19	
P 1N 4757 A	51	95	5.0	1500	0.25	9	5	38.8	18	
1N 4758 A	56	110	4.5	2000	0.25	9	5	42.6	16	
P 1N 4759 A	62	125	4.0	2000	0.25	9	5	47.1	14	
P 1N 4760 A	68	150	3.7	2000	0.25	9	5	51.7	13	
1N 4761 A	75	175	3.3	2000	0.25	9	5	56	12	
P 1N 4762 A	82	200	3.0	3000	0.25	9	5	62.2	11	
1N 4763 A	91	250	2.8	3000	0.25	9	5	69.2	10	
1N 4764 A	100	350	2.5	3000	0.25	9	5	76	9	
1N 4187 B	110	450	2.3	4000	0.25	10	5	83.6	8.6	
1N 4188 B	120	550	2.0	4500	0.25	10	5	91.2	7.8	
1N 4189 B	130	700	1.9	5000	0.25	10	5	98.8	7	
1N 4190 B	150	1000	1.7	6000	0.25	10	5	114	6.4	
1N 4191 B	160	1100	1.6	6500	0.25	10	5	121.6	5.8	
1N 4192 B	180	1200	1.4	7000	0.25	10	5	136.8	5.2	
1N 4193 B	200	1500	1.2	8000	0.25	10	5	152	4.7	

* Measure under thermal equilibrium and DC current test conditions ($T_{amb} 25^\circ\text{C}$).

Tolerance on nominal V_{ZT} value : $\pm 5\%$.

P : Preferred voltages.

Tight tolerances on preferred voltages :

1N 47.. C : $\pm 2\%$.

1N 47.. D : $\pm 1\%$.

ZENER DIODES

STANDARD ZENER DIODES

Type	V _{ZT} / I _{ZT} *			r _{ZT} / I _{ZT} *	I _{ZT} *	r _{ZK} / I _{ZK}		αV _Z	I _R / V _R T _{amb} 25°C	V _R	I _{ZM}	Package
	min	nom	max			max	max					
	(V)			(Ω)	(mA)	(Ω)	(mA)	(10 ⁻⁴ /°C)	max	(V)	(mA)	

 1 W / T_{amb} = 50°C T_j max = 175°C

 V_F ≤ 1.5 V (T_{amb} = 25°C, I_F = 0.2A)

1N 3016 B	6.4	6.8	7.2	3.5	37	700	1.0	4	150	5.2	140	DO 13
1N 3017 B	7.0	7.5	7.9	4	34	700	0.5	4.5	100	5.7	130	
1N 3018 B	7.7	8.2	8.7	4.5	31	700	0.5	4.8	50	6.2	110	
1N 3019 B	8.5	9.1	9.6	5	28	700	0.5	5.1	25	6.9	100	
1N 3020 B	9.4	10	10.6	7	25	700	0.25	5.5	25	7.6	94	
1N 3021 B	10.4	11	11.6	8	23	700	0.25	6	5	8.4	86	
1N 3022 B	11.4	12	12.7	9	21	700	0.25	6.5	5	9.1	79	
1N 3023 B	12.4	13	14.1	10	19	700	0.25	6.5	5	9.9	71	
1N 3024 B	13.8	15	15.6	14	17	700	0.25	7	5	11.4	64	
1N 3025 B	15.3	16	17.1	16	15.5	700	0.25	7	5	12.2	59	
1N 3026 B	16.8	18	19.1	20	14	750	0.25	7.5	5	13.7	52	
1N 3027 B	18.8	20	21.2	22	12.5	750	0.25	7.5	5	15.2	47	
1N 3028 B	20.8	22	23.3	23	11.5	750	0.25	8	5	16.7	43	
1N 3029 B	22.8	24	25.6	25	10.5	750	0.25	8	5	18.2	39	
1N 3030 B	25.1	27	28.9	35	9.5	750	0.25	8.5	5	20.6	35	
1N 3031 B	28	30	32	40	8.5	1000	0.25	8.5	5	22.8	31	
1N 3032 B	31	33	35	45	7.5	1000	0.25	8.5	5	25.1	29	
1N 3033 B	34	36	38	50	7	1000	0.25	8.5	5	27.4	26	
1N 3034 B	37	39	41	60	6.5	1000	0.25	9	5	29.7	24	
1N 3035 B	40	43	46	70	6	1500	0.25	9	5	32.7	22	
1N 3036 B	44	47	50	80	5.5	1500	0.25	9	5	35.8	20	
1N 3037 B	48	51	54	95	5	1500	0.25	9	5	38.8	19	
1N 3038 B	52	56	60	110	4.5	2000	0.25	9	5	42.6	17	
1N 3039 B	58	62	66	125	4	2000	0.25	9	5	47.1	15	
1N 3040 B	64	68	72	150	3.7	2000	0.25	9	5	51.7	14	
1N 3041 B	70	75	79	175	3.3	2000	0.25	9	5	56	13	
1N 3042 B	77	82	87	200	3	3000	0.25	9	5	62.2	12	
1N 3043 B	85	91	96	250	2.8	3000	0.25	9	5	69.2	10	
1N 3044 B	94	100	106	350	2.5	3000	0.25	9	5	76	9.4	
1N 3045 B	104	110	116	450	2.3	4000	0.25	9.5	5	83.6	8.6	
1N 3046 B	114	120	127	550	2	4500	0.25	9.5	5	91.2	7.8	
1N 3047 B	124	130	141	700	1.9	5000	0.25	9.5	5	98.8	7.0	
1N 3048 B	138	150	156	1000	1.7	6000	0.25	9.5	5	114	6.4	
1N 3049 B	153	160	171	1100	1.6	6500	0.25	9.5	5	121.6	5.8	
1N 3050 B	168	180	191	1200	1.4	7000	0.25	9.5	5	136.8	5.2	
1N 3051 B	188	200	212	1500	1.2	8000	0.25	10	5	152	4.7	

 * Measure under thermal equilibrium and DC current test conditions (T_{amb} 25°C).

ZENER DIODES

STANDARD ZENER DIODES

PREFERRED SERIES
PRO-ELECTRON SERIES
CECC APPROVAL

Type	V_{ZT} / I_{ZT}^*		r_{ZT} / I_{ZT}^*	I_{ZT}^*	r_{ZK} / I_{ZK}		α_{VZ}		I_R / V_R		V_R	I_{ZM}	I_{ZSM}	Package
	min	max	max	(mA)	max	(mA)	min	max	T_{amb} 25°C	T_{amb} 150°C	(V)	(mA)	(mA)	
	(V)		(Ω)		(Ω)		(10 ⁻⁴ /°C)		max	max				
									(μA)					

1.3 W / $T_{amb} = 25^\circ\text{C}$ $T_j \text{ max} = 175^\circ\text{C}$

$V_F \leq 1 \text{ V}$ ($T_{amb} = 25^\circ\text{C}$, $I_F = 0.2 \text{ A}$)

BZX 85 C 2V7 CECCCL	2.5	2.9	20	80	400	1	-8	-5	150	300	1	370	3200	DO 41
BZX 85 C 3V0 CECCCL	2.8	3.2	20	80	400	1	-8	-5	100	300	1	340	3000	
P BZX 85 C 3V3 CECCCL	3.1	3.5	20	80	400	1	-8	-5	40	200	1	320	2800	
P BZX 85 C 3V6 CECCCL	3.4	3.8	20	70	500	1	-8	-5	20	50	1	290	2660	
P BZX 85 C 3V9 CECCCL	3.7	4.1	15	60	500	1	-7	-2	10	20	1	280	2540	
P BZX 85 C 4V3 CECCCL	4.0	4.6	13	50	500	1	-5	1	3	10	1	250	2440	
P BZX 85 C 4V7 CECCCL	4.4	5.0	13	45	500	1	-3	4	3	10	1	215	2320	
P BZX 85 C 5V1 CECCCL	4.8	5.4	10	45	500	1	-1	4	1	10	1.5	200	2200	
P BZX 85 C 5V6 CECCCL	5.2	6.0	7	45	400	1	0	4.5	1	10	2	190	2080	
P BZX 85 C 6V2 CECCCL	5.8	6.6	4	35	300	1	1	5.5	1	10	3	170	1960	
P BZX 85 C 6V8 CECCCL	6.4	7.2	3.5	35	300	1	1.5	6	1	10	4	155	1800	
P BZX 85 C 7V5 CECCCL	7.0	7.9	3	35	200	0.5	2	6.5	1	10	4.5	140	1620	
P BZX 85 C 8V2 CECCCL	7.7	8.7	5	25	200	0.5	3	7	1	10	6.2	130	1520	
P BZX 85 C 9V1 CECCCL	8.5	9.6	5	25	200	0.5	3.5	7.5	1	10	6.8	120	1340	
P BZX 85 C 10 CECCCL	9.4	10.6	7	25	200	0.5	4	8	0.5	10	7.5	105	1200	
BZX 85 C 11 CECCCL	10.4	11.6	8	20	300	0.5	4.5	8	0.5	10	8.2	97	1100	
P BZX 85 C 12 CECCCL	11.4	12.7	9	20	350	0.5	4.5	8.5	0.5	10	9.1	88	1000	
BZX 85 C 13 CECCCL	12.4	14.1	10	20	400	0.5	5	8.5	0.5	10	10	79	900	
P BZX 85 C 15 CECCCL	13.8	15.6	15	15	500	0.5	5.5	9	0.5	10	11	71	760	
P BZX 85 C 16 CECCCL	15.3	17.1	15	15	500	0.5	5.5	9	0.5	10	12	66	700	
P BZX 85 C 18 CECCCL	16.8	19.1	20	15	500	0.5	6	9	0.5	10	13	62	600	
P BZX 85 C 20 CECCCL	18.8	21.2	24	10	600	0.5	6	9	0.5	10	15	56	540	
P BZX 85 C 22 CECCCL	20.8	23.3	25	10	600	0.5	6	9.5	0.5	10	16	52	500	
P BZX 85 C 24 CECCCL	22.8	25.6	25	10	600	0.5	6	9.5	0.5	10	18	47	490	
P BZX 85 C 27 CECCCL	25.1	28.9	30	8	750	0.25	6	9.5	0.5	10	20	41	400	
P BZX 85 C 30 CECCCL	28	32	30	8	1000	0.25	6	9.5	0.5	10	22	36	380	
P BZX 85 C 33 CECCCL	31	35	35	8	1000	0.25	6	9.5	0.5	10	24	33	350	
P BZX 85 C 36 CECCCL	34	38	40	8	1000	0.25	6	9.5	0.5	10	27	30	320	
P BZX 85 C 39 CECCCL	37	41	50	6	1000	0.25	6	9.5	0.5	10	30	28	296	
BZX 85 C 43 CECCCL	40	46	50	6	1000	0.25	6	9.5	0.5	10	33	26	270	
BZX 85 C 47 CECCCL	44	50	90	4	1500	0.25	6	9.5	0.5	10	36	23	246	
BZX 85 C 51 CECCCL	48	54	115	4	1500	0.25	6	9.5	0.5	10	39	21	226	
BZX 85 C 56 CECCCL	52	60	120	4	2000	0.25	6	9.5	0.5	10	43	19	208	
P BZX 85 C 62 CECCCL	58	66	125	4	2000	0.25	6	9.5	0.5	10	47	16	186	
P BZX 85 C 68	64	72	130	4	2000	0.25	6	9.5	0.5	10	51	15	171	
BZX 85 C 75	70	80	135	4	2000	0.25	6	9.5	0.5	10	56	14	161	
BZX 85 C 82	77	87	200	2.7	3000	0.25	7	12	0.5	10	62	12	141	
BZX 85 C 91	85	96	250	2.7	3000	0.25	7	12	0.5	10	68	10	127	
P BZX 85 C 100	94	106	350	2.7	3000	0.25	7	12	0.5	10	75	9.4	116	
BZX 85 C 110	104	116	450	2.7	4000	0.25	7	12	0.5	10	82	8.6	105	
BZX 85 C 120	114	127	550	2	4500	0.25	7	12	0.5	10	91	7.8	96	
BZX 85 C 130	124	141	700	2	5000	0.25	7	12	0.5	10	100	7.0	89	
BZX 85 C 150	138	156	1000	2	6000	0.25	7	12	0.5	10	110	6.4	77	
BZX 85 C 160	153	171	1100	1.5	6500	0.25	7	12	0.5	10	120	5.8	72	
BZX 85 C 180	168	191	1200	1.5	7000	0.25	7	12	0.5	10	130	5.2	64	
BZX 85 C 200	180	212	1500	1.5	8000	0.25	7	12	0.5	10	150	4.7	58	

* Pulse test $20 \text{ ms} \leq t_p \leq 50 \text{ ms}$ $\delta < 2\%$.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

Tight tolerances on preferred voltages :

BZX 85 B : $\pm 2\%$.

BZX 85 A : $\pm 1\%$.

ZENER DIODES

STANDARD ZENER DIODES

Type	V_{ZT} / I_{ZT}^*		r_{ZT} / I_{ZT}^*	I_{ZT}^*	α_{VZ}		I_R / V_R	ΔV_R	I_{ZM}	Package
	min	max			min	max				
	(V)		(Ω)	(mA)	$(10^{-4}/^{\circ}\text{C})$		(μA)	(V)	(mA)	

1.5 W / $T_{amb} = 50^{\circ}\text{C}$ $T_j \text{ max} = 150^{\circ}\text{C}$
 $P_S (10 \text{ ms}) = 40 \text{ W}$ $V_F \leq 1.2 \text{ V} (T_{amb} = 25^{\circ}\text{C}, I_F = 0.2 \text{ A})$

BZY 97 C 3V3	3.1	3.5	10	100	- 10	2			429	F 126
BZY 97 C 3V6	3.4	3.8	10	100	- 8	2			395	
BZY 97 C 3V9	3.7	4.1	7	100	- 7	2			366	
BZY 97 C 4V3	4.0	4.6	7	100	- 7	3			327	
BZY 97 C 4V7	4.4	5.0	7	100	- 7	4			300	
P BZY 97 C 5V1	4.8	5.4	5	100	- 6	5			278	
P BZY 97 C 5V6	5.2	6.0	2	100	- 3	5	1	1	250	
P BZY 97 C 6V2	5.8	6.6	2	100	- 1	6	1	1	227	
P BZY 97 C 6V8	6.4	7.2	2	100	0	7	1	1	208	
BZY 97 C 7V5	7.0	7.9	2	100	0	7	0.5	2	190	
BZY 97 C 8V2	7.7	8.7	2	100	3	8	0.5	3.5	172	
BZY 97 C 9V1	8.5	9.6	4	50	3	8	0.5	3.5	156	
BZY 97 C 10	9.4	10.6	4	50	5	9	0.5	5	142	
BZY 97 C 11	10.4	11.6	7	50	5	10	0.5	5	129	
P BZY 97 C 12	11.4	12.7	7	50	5	10	0.5	7	118	
P BZY 97 C 13	12.4	14.1	10	50	5	10	0.5	7	106	
P BZY 97 C 15	13.8	15.6	10	50	5	10	0.5	10	96	
BZY 97 C 16	15.3	17.1	15	25	6	11	0.5	10	88	
P BZY 97 C 18	16.8	19.1	15	25	6	11	0.5	10	79	
P BZY 97 C 20	18.8	21.2	15	25	6	11	0.5	10	71	
P BZY 97 C 22	20.8	23.3	15	25	6	11	0.5	12	64	
P BZY 97 C 24	22.8	25.6	15	25	6	11	0.5	12	59	
P BZY 97 C 27	25.1	28.9	15	25	6	11	0.5	14	52	
P BZY 97 C 30	28	32	15	25	6	11	0.5	14	47	
P BZY 97 C 33	31	35	15	25	6	11	0.5	17	43	
P BZY 97 C 36	34	38	40	10	6	11	0.5	17	40	
BZY 97 C 39	37	41	40	10	6	11	0.5	20	37	
BZY 97 C 43	40	46	45	10	7	12	0.5	20	33	
P BZY 97 C 47	44	50	45	10	7	12	0.5	24	30	
BZY 97 C 51	48	54	60	10	7	12	0.5	24	28	
BZY 97 C 56	52	60	60	10	7	12	0.5	28	25	
P BZY 97 C 62	58	66	80	10	7	12	0.5	28	23	
P BZY 97 C 68	64	72	80	10	7	12	0.5	34	21	
BZY 97 C 75	70	79	100	10	7	12	0.5	34	19	
BZY 97 C 82	77	87	100	10	7	12	0.5	41	17	
BZY 97 C 91	85	96	200	5	8	13	0.5	41	16	
BZY 97 C 100	94	106	200	5	8	13	0.5	50	14	
BZY 97 C 110	104	116	250	5	8	13	0.5	50	13	
BZY 97 C 120	114	127	250	5	8	13	0.5	60	12	
P BZY 97 C 130	124	141	300	5	8	13	0.5	60	11	
P BZY 97 C 150	138	156	300	5	8	13	0.5	75	10	
BZY 97 C 160	153	171	350	5	8	13	0.5	75	9	
BZY 97 C 180	168	191	350	5	8	13	0.5	90	8	
P BZY 97 C 200	188	212	350	5	8	13	0.5	90	7	

* Pulse test $t_p \leq 50 \mu\text{s}$ $\delta < 2\%$.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

ZENER DIODES

STANDARD ZENER DIODES

Type	V_{ZT}/I_{ZT}^*		r_{ZT}/I_{ZT}^*	I_{ZT}^*	α_{VZ}	I_R/V_R	V_R	I_{ZM} T_{amb} 70°C	Package
	min	max	max	(mA)	typ (10 ⁻⁴ /°C)	max (μA)	(V)	(mA)	
	(V)		(Ω)						

2 W / $T_{amb} = 70^\circ\text{C}$ $T_j \text{ max} = 175^\circ\text{C}$
 P_S (10 ms) = 60 W $V_F \leq 1.2 \text{ V}$ ($T_{amb} = 25^\circ\text{C}$, $I_F = 0.5 \text{ A}$)

BZV 47 C 3V3	3.1	3.5	10	100	-6.0			570	F 126
BZV 47 C 3V6	3.4	3.8	10	100	-5.5			525	
BZV 47 C 3V9	3.7	4.1	7	100	-5.0			485	
BZV 47 C 4V3	4.0	4.6	7	100	-4.0			435	
BZV 47 C 4V7	4.4	5.0	7	100	-2.0			400	
P BZV 47 C 5V1	4.8	5.4	5	100	1.0			370	
P BZV 47 C 5V6	5.2	6.0	2	100	2.5	5	1	330	
P BZV 47 C 6V2	5.8	6.6	2	100	3.2	5	1	300	
P BZV 47 C 6V8	6.4	7.2	2	100	4.0	5	1	275	
BZV 47 C 7V5	7.0	7.9	2	100	4.5	5	2	250	
BZV 47 C 8V2	7.7	8.7	2	100	4.8	5	3.5	230	
BZV 47 C 9V1	8.5	9.6	4	50	5.1	5	3.5	205	
BZV 47 C 10	9.4	10.6	4	50	5.5	5	7.6	185	
BZV 47 C 11	10.4	11.6	7	50	6.0	1	8.3	170	
P BZV 47 C 12	11.4	12.7	7	50	6.5	1	9.1	155	
P BZV 47 C 13	12.4	14.1	10	50	6.5	1	9.9	140	
P BZV 47 C 15	13.8	15.6	10	50	7.0	1	11.4	130	
BZV 47 C 16	15.3	17.1	15	25	7.0	0.5	12.2	115	
P BZV 47 C 18	16.8	19.1	15	25	7.5	0.5	13.7	105	
P BZV 47 C 20	18.8	21.2	15	25	7.5	0.5	15.2	94	
P BZV 47 C 22	20.8	23.3	15	25	8.0	0.5	16.7	86	
P BZV 47 C 24	22.8	25.6	15	25	8.0	0.5	18.2	78	
P BZV 47 C 27	25.1	28.9	15	25	8.5	0.5	20.5	69	
P BZV 47 C 30	28	32	15	25	8.5	0.5	22.8	62	
BZV 47 C 33	31	35	15	25	8.5	0.5	25	57	
P BZV 47 C 36	34	38	40	10	8.5	0.5	27.4	52	
BZV 47 C 39	37	41	40	10	9.0	0.5	29.6	48	
BZV 47 C 43	40	46	45	10	9.0	0.5	32.7	43	
P BZV 47 C 47	44	50	45	10	9.0	0.5	35.7	40	
BZV 47 C 51	48	54	60	10	9.0	0.5	38.8	37	
BZV 47 C 56	52	60	60	10	9.0	0.5	42.5	33	
P BZV 47 C 62	58	66	80	10	9.0	0.5	47.1	30	
P BZV 47 C 68	64	72	80	10	9.0	0.5	51.7	27	
BZV 47 C 75	70	79	100	10	9.0	0.5	57	25	
BZV 47 C 82	77	87	100	10	9.0	0.5	62.4	23	
BZV 47 C 91	85	96	200	5	9.0	0.5	69.2	20	
P BZV 47 C 100	94	106	200	5	9.0	0.5	76	18	
BZV 47 C 110	104	116	250	5	9.5	0.5	83.5	17	
BZV 47 C 120	114	127	250	5	9.5	0.5	91.2	15	
P BZV 47 C 130	124	141	300	5	9.5	0.5	98.2	14	
P BZV 47 C 150	138	156	300	5	9.5	0.5	114	12.8	
BZV 47 C 160	153	171	350	5	9.5	0.5	122	11.7	
BZV 47 C 180	168	191	350	5	9.5	0.5	137	10.5	
P BZV 47 C 200	188	212	350	5	9.5	0.5	152	9.4	

* Pulse test $t_p \leq 50\text{ms}$ $\delta < 2\%$.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

ZENER DIODES

STANDARD ZENER DIODES

Type	V_{ZT} / I_{ZT}^*	I_{ZT}^*	r_{ZT} / I_{ZT}^*	r_{ZK} / I_{ZK} 1.0 mA	I_R / V_R	αV_Z	I_{ZM} T_{amb} 75°C	V_Z	Package
	nom. (V)	(mA)	max. (Ω)	(Ω)	max. (μA) (V)	typ. (10 ⁻⁴ /°C)	max. (mA)	max. (V) **	

5 W / $T_{amb} = 75^\circ\text{C}$ $T_j \text{ max} = 200^\circ\text{C}$
 $P_S (10 \text{ ms}) = 150 \text{ W}$
 $V_F \leq 1.2 \text{ V} (T_{amb} = 25^\circ\text{C}, I_F = 1 \text{ A})$

1N 5333 B	3.3	380	3.0	400	300	1.0	- 6	1440	0.85	CB-417
1N 5334 B	3.6	350	2.5	500	150	1.0	- 5.5	1320	0.80	
1N 5335 B	3.9	320	2.0	500	50	1.0	- 5	1220	0.54	
1N 5336 B	4.3	290	2.0	500	10	1.0	- 4	1100	0.49	
1N 5337 B	4.7	260	2.0	450	5.0	1.0	- 2	1010	0.44	
P 1N 5338 B	5.1	240	1.5	400	1.0	1.0	1	930	0.39	
P 1N 5339 B	5.6	220	1.0	400	1.0	2.0	2.5	865	0.25	
1N 5340 B	6.0	200	1.0	300	1.0	3.0	2.8	790	0.19	
P 1N 5341 B	6.2	200	1.0	200	1.0	3.0	3.2	765	0.10	
P 1N 5342 B	6.8	175	1.0	200	10	5.2	4	700	0.15	
1N 5343 B	7.5	175	1.5	200	10	5.7	4.5	630	0.15	
1N 5344 B	8.2	150	1.5	200	10	6.2	4.8	580	0.20	
1N 5345 B	8.7	150	2.0	200	10	6.6	4.9	545	0.20	
1N 5346 B	9.1	150	2.0	150	7.5	6.9	5.1	520	0.22	
1N 5347 B	10	125	2.0	125	5.0	7.6	5.5	475	0.22	
1N 5348 B	11	125	2.5	125	5.0	8.4	6	430	0.25	
P 1N 5349 B	12	100	2.5	125	2.0	9.1	6.5	395	0.25	
1N 5350 B	13	100	2.5	100	1.0	9.9	6.5	365	0.25	
1N 5351 B	14	100	2.5	75	1.0	10.6	7	340	0.25	
P 1N 5352 B	15	75	2.5	75	1.0	11.5	7	315	0.25	
P 1N 5353 B	16	75	2.5	75	1.0	12.2	7	295	0.30	
1N 5354 B	17	70	2.5	75	0.5	12.9	7	280	0.35	
P 1N 5355 B	18	65	2.5	75	0.5	13.7	7.5	264	0.40	
1N 5356 B	19	65	3.0	75	0.5	14.4	7.5	250	0.40	
1N 5357 B	20	65	3.0	75	0.5	15.2	7.5	237	0.40	
P 1N 5358 B	22	50	3.5	75	0.5	16.7	8	216	0.45	
P 1N 5359 B	24	50	3.5	100	0.5	18.2	8	198	0.55	
1N 5360 B	25	50	4.0	110	0.5	19.0	8	190	0.55	
P 1N 5361 B	27	50	5.0	120	0.5	20.6	8.5	176	0.60	
1N 5362 B	28	50	6.0	130	0.5	21.2	8.5	170	0.60	
P 1N 5363 B	30	40	8.0	140	0.5	22.8	8.5	158	0.60	
1N 5364 B	33	40	10	150	0.5	25.1	8.5	144	0.60	
P 1N 5365 B	36	30	11	160	0.5	27.4	9	132	0.65	
1N 5366 B	39	30	14	170	0.5	29.7	9	122	0.65	
1N 5367 B	43	30	20	190	0.5	32.7	9	110	0.70	
1N 5368 B	47	25	25	210	0.5	35.8	9	100	0.80	
1N 5369 B	51	25	27	230	0.5	38.8	9	93	0.90	
1N 5370 B	56	20	35	280	0.5	42.6	9	86	1.00	
1N 5371 B	60	20	40	350	0.5	45.5	9	79	1.20	
P 1N 5372 B	62	20	42	400	0.5	47.1	9	76	1.35	
1N 5373 B	68	20	44	500	0.5	51.7	9	70	1.50	
1N 5374 B	75	20	45	620	0.5	56.0	9	63	1.60	
1N 5375 B	82	15	65	720	0.5	62.2	9	58	1.80	
1N 5376 B	87	15	75	760	0.5	66.0	9	54.5	2.00	
1N 5377 B	91	15	75	760	0.5	69.2	9	52.5	2.20	
P 1N 5378 B	100	12	90	800	0.5	76.0	9.5	47.5	2.50	
1N 5379 B	110	12	125	1000	0.5	83.6	9.5	43	2.50	
1N 5380 B	120	10	170	1150	0.5	91.2	9.5	39.5	2.50	
1N 5381 B	130	10	190	1250	0.5	98.8	9.5	36.5	2.50	
1N 5382 B	140	8.0	230	1500	0.5	106	9.5	34	2.50	
P 1N 5383 B	150	8.0	330	1500	0.5	114	9.5	31.6	3.00	
1N 5384 B	160	8.0	350	1650	0.5	122	9.5	29.4	3.00	
1N 5385 B	170	8.0	380	1750	0.5	129	9.5	28	3.00	
P 1N 5386 B	180	5.0	430	1750	0.5	137	9.5	26.4	4.00	
1N 5387 B	190	5.0	450	1850	0.5	144	9.5	25	5.00	
P 1N 5388 B	200	5.0	480	1850	0.5	152	10	23.6	5.00	

Tolerance on nominal V_{ZT} value : $\pm 5\%$.

P : Preferred voltages.

* Pulse test $t_p \leq 50 \text{ ms}$ $\delta < 2\%$.

** Measured between 10% and 50% of I_{ZM} .

ZENER DIODES

STANDARD ZENER DIODES

Type	V_{ZT} / I_{ZT}^*		r_{ZT} / I_{ZT}^*	I_{ZT}^*	α_{VZ}	I_R / V_R	V_R	I_{ZM} T_{amb} 50°C	Package
	min	max	max	(mA)	typ (10 ⁻⁴ /°C)	max (μA)	(V)	(mA)	
	(V)		(Ω)						

5 W / $T_{amb} = 50^\circ\text{C}$ $T_j \text{ max} = 175^\circ\text{C}$
 P_S (10 ms) = 200 W $V_F \leq 1.2 \text{ V}$ ($T_{amb} = 25^\circ\text{C}$, $I_F = 1 \text{ A}$)

BZV 58 C 3V3	3.1	3.5	3	380	— 6.0			1430	CB-417
BZV 58 C 3V6	3.4	3.8	2.5	350	— 5.5			1310	
BZV 58 C 3V9	3.7	4.1	2	320	— 5.0			1220	
BZV 58 C 4V3	4.0	4.6	2	290	— 4.0			1090	
BZV 58 C 4V7	4.4	5.0	2	260	— 2.0			1000	
P BZV 58 C 5V1	4.8	5.4	1.5	240	1.0			925	
P BZV 58 C 5V6	5.2	6.0	1	220	2.5	20	1	830	
P BZV 58 C 6V2	5.8	6.6	1	200	3.2	10	1	750	
P BZV 58 C 6V8	6.4	7.2	1	175	4.0	10	2	690	
BZV 58 C 7V5	7.0	7.9	1.5	175	4.5	10	2	630	
BZV 58 C 8V2	7.7	8.7	1.5	150	4.8	10	3	570	
BZV 58 C 9V1	8.5	9.6	2	150	5.1	10	6.6	520	
BZV 58 C 10	9.4	10.6	2	125	5.5	10	7.6	470	
BZV 58 C 11	10.4	11.6	2.5	125	6.0	5	8.3	430	
P BZV 58 C 12	11.4	12.7	2.5	100	6.5	2	9.1	390	
BZV 58 C 13	12.4	14.1	2.5	100	6.5	1	9.9	350	
P BZV 58 C 15	13.8	15.6	2.5	75	7.0	1	11.4	320	
P BZV 58 C 16	15.3	17.1	2.5	75	7.0	0.5	12.2	290	
P BZV 58 C 18	16.8	19.1	2.5	65	7.5	0.5	13.7	260	
BZV 58 C 20	18.8	21.2	3	65	7.5	0.5	15.2	235	
P BZV 58 C 22	20.8	23.3	3.5	50	8.0	0.5	16.7	215	
P BZV 58 C 24	22.8	25.6	3.5	50	8.0	0.5	18.2	195	
P BZV 58 C 27	25.1	28.9	5	50	8.5	0.5	20.5	170	
P BZV 58 C 30	28	32	8	40	8.5	0.5	22.8	155	
BZV 58 C 33	31	35	10	40	8.5	0.5	25	140	
P BZV 58 C 36	34	38	11	30	8.5	0.5	27.4	130	
BZV 58 C 39	37	41	14	30	9.0	0.5	29.6	120	
BZV 58 C 43	40	46	20	30	9.0	0.5	32.7	110	
BZV 58 C 47	44	50	25	25	9.0	0.5	35.7	100	
BZV 58 C 51	48	54	27	25	9.0	0.5	38.8	92	
BZV 58 C 56	52	60	35	20	9.0	0.5	42.5	83	
P BZV 58 C 62	58	66	42	20	9.0	0.5	47.1	75	
BZV 58 C 68	64	72	44	20	9.0	0.5	51.7	69	
BZV 58 C 75	70	79	45	20	9.0	0.5	57	63	
BZV 58 C 82	77	87	65	15	9.0	0.5	62.4	57	
BZV 58 C 91	85	96	75	15	9.0	0.5	69.2	52	
P BZV 58 C 100	94	106	90	12	9.0	0.5	76	47	
BZV 58 C 110	104	116	125	12	9.5	0.5	83.5	43	
BZV 58 C 120	114	127	170	10	9.5	0.5	91.2	39	
BZV 58 C 130	124	141	190	10	9.5	0.5	98.8	35	
P BZV 58 C 150	138	156	330	8	9.5	0.5	114	32	
BZV 58 C 160	153	171	350	8	9.5	0.5	122	29	
P BZV 58 C 180	168	191	430	5	9.5	0.5	137	26	
P BZV 58 C 200	188	212	480	5	10	0.5	152	23	

 * Pulse test $t_p \leq 50\text{ms}$ $\delta < 2\%$.

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

ZENER DIODES

SYMMETRICAL ZENER DIODE

Type	V_{ZT} / I_{ZT}		I_{ZT} (mA)	r_{ZT} / I_{ZT} (Ω)	$V_{(CL)} @ I_{pp}$		$V_{(CL)} @ I_{pp}$		I_R / V_R		C typ $V_R = 0$ $F = 1 \text{ MHz}$ (pF)	Package
	min.	max.			1 ms expo. (V)	(A)	8-20 μ s expo. (V)	(A)	(μ A)	(V)		
BZV 37	6.2	6.8	5	20	15	2	25	7	1 10	2 4	90	DO 35

TEMPERATURE COMPENSATED ZENER DIODES

Type	V_{ZT}^* typ (V)	r_{ZT}^* max (Ω)	I_{ZT} (mA)	Test temperatures ($^{\circ}\text{C}$)					ΔV_Z max (mV)	α_{VZ} max ($10^{-6}/^{\circ}\text{C}$)	Package
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$V_{ZT} = 6.2 \text{ V}$

1N 821 1N 823 1N 825 1N 827 1N 829	<ul style="list-style-type: none"> • 1N 821 A • 1N 823 A • 1N 825 A • 1N 827 A • 1N 829 A 	6.2	15 without suffix 10 with suffix A	7.5	-55	0	25	75	100	96 48 19 9 5	100 50 20 10 5	DO 35
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$V_{ZT} = 6.4 \text{ V}$

1N 4565 1N 4566 1N 4567 1N 4568 1N 4569		6.4	200	0.5	0	25	75			48 24 10 5 2	100 50 20 10 5	DO 35
1N 4575 1N 4576 1N 4577 1N 4578 1N 4579		6.4	50	2	0	25	75			48 24 10 5 2	100 50 20 10 5	
<ul style="list-style-type: none"> • 1N 4565 A • 1N 4566 A • 1N 4567 A • 1N 4568 A • 1N 4569 A 		6.4	200	0.5	-55	0	25	75	100	99 50 20 10 5	100 50 20 10 5	
1N 4575 A 1N 4576 A 1N 4577 A 1N 4578 A 1N 4579 A		6.4	200	0.5	-55	0	25	75	100	99 50 20 10 5	100 50 20 10 5	

$V_{ZT} = 8.4 \text{ V}$

1N 3154 1N 3155 1N 3156 1N 3157		8.4	15	10	-55	0	25	75	100	130 65 26 13	100 50 20 10	DO 35
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$V_{ZT} = 6.2 \text{ V}$

1N 935 A 1N 936 A 1N 937 A 1N 938 A 1N 939 A		9	20	7.5	-55	0	25	75	100	139 69 27 13 7	100 50 20 10 5	DO 35
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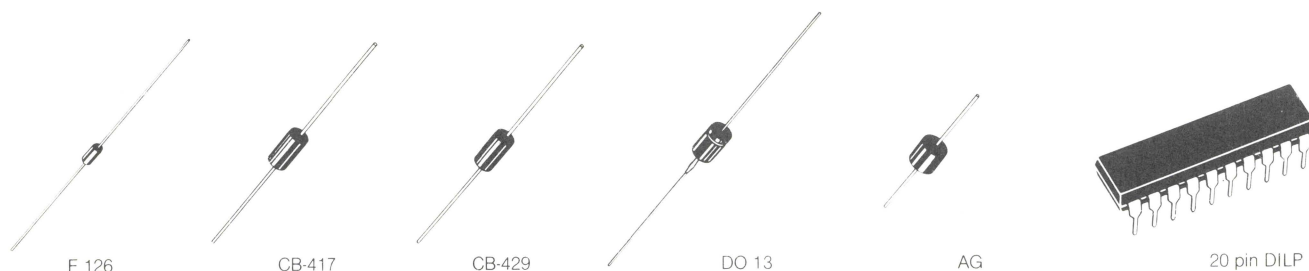
* $T_{amb} = 25^{\circ}\text{C}$.
 • ESA qualified product.

Tolerance on nominal V_{ZT} value : $\pm 5\%$.

REFERENCE DIODES

Type	$I_F = 5 \text{ mA}$			Case
	V_F (V)		r (Ω)	
	min	max	max	
PLE 0.7 PLE 1.5	0.65 1.35	0.75 1.55	10 20	F 126

PROTECTION



TRANSIENT VOLTAGE SUPPRESSOR «TRANSIL» FOR TRIAC PROTECTION

Type bidirectional	$I_{RM} @ V_{RM}$ max.		$V_{BR} @ I_R$ (typ.)		$V_{CL} @ I_{pp}$ max. 8/20 μs expo.		α_T max	Package
	(μA)	(V)	(V)	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	
BZW 04-376 BT	5	376	480	1	600	1	11	F 126

TRANSIENT VOLTAGE SUPPRESSOR «TRANSIL» FOR IGNITION AUTOMOTIVE PROTECTION

Type unidirectional	$I_{RM} @ V_{RM}$ max.		V_{BR} (V) @ $T_j = 25^{\circ}C$		V_{BR} (V) @ $T_j = 120^{\circ}C$		I_R	α_T typ.	I_{ZM}	Package
	(μA)	(V)	min	max	min	max	(mA)	($10^{-4}/^{\circ}C$)	(mA)	
PL 360 D	0.35	270	330	370	358	416	2	11	3.5	F 126

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		$I_{RM} @ V_{RM}$ max		$V_{(BR)}^* @ I_R$ (V)				$V_{(CL)} @ I_{pp}$ max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

400 W / 1 ms expo.

 $I_{FSM} = 50 A \cdot 10 ms$ for unidirectional

P BZW04P5V8	P BZW04P5V8B	1000	5.8	6.45	6.8	7.48	10	10.5	38	5.7	F 126
BZW04-5V8	BZW04-5V8B	1000	5.8	6.45	6.8	7.14	10	10.5	38	5.7	
BZW04P6V4	P BZW04P6V4B	500	6.4	7.13	7.5	8.25	10	11.3	35.4	6.1	
BZW04-6V4	BZW04-6V4B	500	6.4	7.13	7.5	7.88	10	11.3	35.4	6.1	
BZW04P7V0	P BZW04P7V0B	200	7.02	7.79	8.2	9.02	10	12.1	33	6.5	
BZW04-7V0	BZW04-7V0B	200	7.02	7.79	8.2	8.61	10	12.1	33	6.5	
BZW04P7V8	BZW04P7V8B	50	7.78	8.65	9.1	10.0	1	13.4	30	6.8	
BZW04-7V8	BZW04-7V8B	50	7.78	8.65	9.1	9.55	1	13.4	30	6.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

P: Preferred device.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		I_{RM} @ V_{RM} max		$V_{(BR)}^*$ (V)			@ I_R	$V_{(CL)}$ @ I_{pp} max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

400 W / 1 ms expo.

 $I_{FSM} = 50 A \cdot 10 ms$ for unidirectional

BZW04P8V5	BZW04P8V5B	10	8.55	9.50	10	11.0	1	14.5	27.6	7.3	F 126
BZW04-8V5	BZW04-8V5B	10	8.55	9.50	10	10.50	1	14.5	27.6	7.3	
P BZW04P9V4	P BZW04P9V4B	5	9.4	10.5	11	12.1	1	15.6	25.7	7.5	
BZW04-9V4	BZW04-9V4B	5	9.4	10.5	11	11.6	1	15.6	25.7	7.5	
BZW04P10	BZW04P10B	5	10.2	11.4	12	13.2	1	16.7	24	7.8	
BZW04-10	BZW04-10B	5	10.2	11.4	12	12.6	1	16.7	24	7.8	
P BZW04P11	P BZW04P11B	5	11.1	12.4	13	14.3	1	18.2	22	8.1	
BZW04-11	BZW04-11B	5	11.1	12.4	13	13.7	1	18.2	22	8.1	
P BZW04P13	P BZW04P13B	5	12.8	14.3	15	16.5	1	21.2	19	8.4	
BZW04-13	BZW04-13B	5	12.8	14.3	15	15.8	1	21.2	19	8.4	
P BZW04P14	P BZW04P14B	5	13.6	15.2	16	17.6	1	22.5	17.8	8.6	
BZW04-14	BZW04-14B	5	13.6	15.2	16	16.8	1	22.5	17.8	8.6	
P BZW04P15	P BZW04P15B	5	15.3	17.1	18	19.8	1	25.2	16	8.8	
BZW04-15	BZW04-15B	5	15.3	17.1	18	18.9	1	25.2	16	8.8	
BZW04P17	BZW04P17B	5	17.1	19	20	22	1	27.7	14.5	9.0	
BZW04-17	BZW04-17B	5	17.1	19	20	21	1	27.7	14.5	9.0	
BZW04P19	BZW04P19B	5	18.8	20.9	22	24.2	1	30.6	13	9.2	
BZW04-19	BZW04-19B	5	18.8	20.9	22	23.1	1	30.6	13	9.2	
BZW04P20	P BZW04P20B	5	20.5	22.8	24	26.4	1	33.2	12	9.4	
BZW04-20	BZW04-20B	5	20.5	22.8	24	25.2	1	33.2	12	9.4	
P BZW04P23	BZW04P23B	5	23.1	25.7	27	29.7	1	37.5	10.7	9.6	
BZW04-23	BZW04-23B	5	23.1	25.7	27	28.4	1	37.5	10.7	9.6	
P BZW04P26	P BZW04P26B	5	25.6	28.5	30	33	1	41.5	9.6	9.7	
BZW04-26	BZW04-26B	5	25.6	28.5	30	31.5	1	41.5	9.6	9.7	
BZW04P28	P BZW04P28B	5	28.2	31.4	33	36.3	1	45.7	8.8	9.8	
BZW04-28	BZW04-28B	5	28.2	31.4	33	34.7	1	45.7	8.8	9.8	
P BZW04P31	P BZW04P31B	5	30.8	34.2	36	39.6	1	49.9	8	9.9	
BZW04-31	BZW04-31B	5	30.8	34.2	36	37.8	1	49.9	8	9.9	
P BZW04P33	BZW04P33B	5	33.3	37.1	39	42.9	1	53.9	7.4	10.0	
BZW04-33	BZW04-33B	5	33.3	37.1	39	41	1	53.9	7.4	10.0	
BZW04P37	P BZW04P37B	5	36.8	40.9	43	47.3	1	59.3	6.7	10.1	
BZW04-37	BZW04-37B	5	36.8	40.9	43	45.2	1	59.3	6.7	10.1	
BZW04P40	BZW04P40B	5	40.2	44.7	47	51.7	1	64.8	6.2	10.1	
BZW04-40	BZW04-40B	5	40.2	44.7	47	49.4	1	64.8	6.2	10.1	
BZW04P44	BZW04P44B	5	43.6	48.5	51	56.1	1	70.1	5.7	10.2	
BZW04-44	BZW04-44B	5	43.6	48.5	51	53.6	1	70.1	5.7	10.2	
BZW04P48	BZW04P48B	5	47.8	53.2	56	61.6	1	77	5.2	10.3	
BZW04-48	BZW04-48B	5	47.8	53.2	56	58.8	1	77	5.2	10.3	
BZW04P53	BZW04P53B	5	53	58.9	62	68.2	1	85	4.7	10.4	
BZW04-53	BZW04-53B	5	53	58.9	62	65.1	1	85	4.7	10.4	
BZW04P58	BZW04P58B	5	58.1	64.6	68	74.8	1	92	4.3	10.4	
BZW04-58	BZW04-58B	5	58.1	64.6	68	71.4	1	92	4.3	10.4	
BZW04P64	BZW04P64B	5	64.1	71.3	75	82.5	1	103	3.9	10.5	
BZW04-64	BZW04-64B	5	64.1	71.3	75	78.8	1	103	3.9	10.5	
BZW04P70	P BZW04P70B	5	70.1	77.9	82	90.2	1	113	3.5	10.5	
BZW04-70	BZW04-70B	5	70.1	77.9	82	86.1	1	113	3.5	10.5	
BZW04P78	BZW04P78B	5	77.8	86.5	91	100	1	125	3.2	10.6	
BZW04-78	BZW04-78B	5	77.8	86.5	91	95.5	1	125	3.2	10.6	
P BZW04P85	BZW04P85B	5	85.5	95	100	110	1	137	2.9	10.6	
BZW04-85	BZW04-85B	5	85.5	95	100	105	1	137	2.9	10.6	
BZW04P94	BZW04P94B	5	94	105	110	121	1	152	2.6	10.7	
BZW04-94	BZW04-94B	5	94	105	110	116	1	152	2.6	10.7	
BZW04P102	BZW04P102B	5	102	114	120	132	1	165	2.4	10.7	
BZW04-102	BZW04-102B	5	102	114	120	126	1	165	2.4	10.7	
P BZW04P111	BZW04P111B	5	111	124	130	143	1	179	2.2	10.7	
BZW04-111	BZW04-111B	5	111	124	130	137	1	179	2.2	10.7	
P BZW04P128	P BZW04P128B	5	128	143	150	165	1	207	2.0	10.8	
BZW04-128	BZW04-128B	5	128	143	150	158	1	207	2.0	10.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

P : Preferred device.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		I_{RM} @ V_{RM} max		$V_{(BR)}^*$ (V)			@	I_R	$V_{(CL)}$ @ I_{pp} max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max		(mA)	(V)	(A)	($10^{-4}^{\circ}C$)	

400 W / 1 ms expo.

 $I_{FSM} = 50 A - 10 ms$ for unidirectional

P BZW04P136	P BZW04P136B	5	136	152	160	176	1	219	1.8	10.8	F 126
BZW04-136	BZW04-136B	5	136	152	160	168	1	219	1.8	10.8	
P BZW04P145	BZW04P145B	5	145	161	170	187	1	234	1.7	10.8	
BZW04-145	BZW04-145B	5	145	161	170	179	1	234	1.7	10.8	
BZW04P154	BZW04P154B	5	154	171	180	198	1	246	1.6	10.8	
BZW04-154	BZW04-154B	5	154	171	180	189	1	246	1.6	10.8	
BZW04P171	BZW04P171B	5	171	190	200	220	1	274	1.5	10.8	
BZW04-171	BZW04-171B	5	171	190	200	210	1	274	1.5	10.8	
BZW04P188	P BZW04P188B	5	188	209	220	242	1	301	1.4	10.8	
BZW04-188	BZW04-188B	5	188	209	220	231	1	301	1.4	10.8	
P BZW04P213	BZW04P213B	5	213	237	250	275	1	344	1.5	11	
BZW04-213	BZW04-213B	5	213	237	250	263	1	344	1.5	11	
P BZW04P239	BZW04P239B	5	239	266	280	308	1	384	1.5	11	
BZW04-239	BZW04-239B	5	239	266	280	294	1	384	1.5	11	
BZW04P256	BZW04P256B	5	256	285	300	330	1	414	1.2	11	
BZW04-256	BZW04-256B	5	256	285	300	315	1	414	1.2	11	
BZW04P273	BZW04P273B	5	273	304	320	352	1	438	1.2	11	
BZW04-273	BZW04-273B	5	273	304	320	336	1	438	1.2	11	
P BZW04P299	BZW04P299B	5	299	332	350	385	1	482	0.9	11	
BZW04-299	BZW04-299B	5	299	332	350	368	1	482	0.9	11	
BZW04P342	BZW04P342B	5	342	380	400	440	1	548	0.9	11	
BZW04-342	BZW04-342B	5	342	380	400	420	1	548	0.9	11	
BZW04P376	BZW04P376B	5	376	418	440	484	1	603	0.8	11	
BZW04-376	BZW04-376B	5	376	418	440	462	1	603	0.8	11	

600 W / 1 ms expo.

 $I_{FSM} = 100 A - 10 ms$ for unidirectional

P P6KE 6V8P	P P6KE 6V8CP	1000 §	5.8	6.45	6.8	7.48	10	10.5	57	5.7	CB-417
P6KE 6V8A	P6KE 6V8CA	1000 §	5.8	6.45	6.8	7.14	10	10.5	57	5.7	
P P6KE 7V5P	P P6KE 7V5CP	500 §	6.4	7.13	7.5	8.25	10	11.3	53	6.1	
P6KE 7V5A	P6KE 7V5CA	500 §	6.4	7.13	7.5	7.88	10	11.3	53	6.1	
P P6KE 8V2P	P6KE 8V2CP	200 §	7.02	7.79	8.2	9.02	10	12.1	50	6.5	
P6KE 8V2A	P6KE 8V2CA	200 §	7.02	7.79	8.2	8.61	10	12.1	50	6.5	
P6KE 9V1P	P6KE 9V1CP	50 §	7.78	8.65	9.1	10	1	13.4	45	6.8	
P6KE 9V1A	P6KE 9V1CA	50 §	7.78	8.65	9.1	9.55	1	13.4	45	6.8	
P6KE 10P	P6KE 10CP	10 §	8.55	9.5	10	11	1	14.5	41	7.3	
P6KE 10A	P6KE 10CA	10 §	8.55	9.5	10	10.5	1	14.5	41	7.3	
P6KE 11P	P6KE 11CP	5 §	9.4	10.5	11	12.1	1	15.6	38	7.5	
P6KE 11A	P6KE 11CA	5 §	9.4	10.5	11	11.6	1	15.6	38	7.5	
P P6KE 12P	P P6KE 12CP	5	10.2	11.4	12	13.2	1	16.7	36	7.8	
P6KE 12A	P6KE 12CA	5	10.2	11.4	12	12.6	1	16.7	36	7.8	
P P6KE 13P	P P6KE 13CP	5	11.1	12.4	13	14.3	1	18.2	33	8.1	
P6KE 13A	P6KE 13CA	5	11.1	12.4	13	13.7	1	18.2	33	8.1	
P P6KE 15P	P P6KE 15CP	5	12.8	14.3	15	16.5	1	21.2	28	8.4	
P6KE 15A	P6KE 15CA	5	12.8	14.3	15	15.8	1	21.2	28	8.4	
P6KE 16P	P6KE 16CP	5	13.6	15.2	16	17.6	1	22.5	27	8.6	
P6KE 16A	P6KE 16CA	5	13.6	15.2	16	16.8	1	22.5	27	8.6	
P P6KE 18P	P P6KE 18CP	5	15.3	17.1	18	19.8	1	25.2	24	8.8	
P6KE 18A	P6KE 18CA	5	15.3	17.1	18	18.9	1	25.2	24	8.8	
P P6KE 20P	P6KE 20CP	5	17.1	19	20	22	1	27.7	22	9.0	
P6KE 20A	P6KE 20CA	5	17.1	19	20	21	1	27.7	22	9.0	
P6KE 22P	P P6KE 22CP	5	18.8	20.9	22	24.2	1	30.6	20	9.2	
P6KE 22A	P6KE 22CA	5	18.8	20.9	22	23.1	1	30.6	20	9.2	
P6KE 24P	P6KE 24CP	5	20.5	22.8	24	26.4	1	33.2	18	9.4	
P6KE 24A	P6KE 24CA	5	20.5	22.8	24	25.2	1	33.2	18	9.4	
P P6KE 27P	P6KE 27CP	5	23.1	25.7	27	29.7	1	37.5	16	9.6	
P6KE 27A	P6KE 27CA	5	23.1	25.7	27	28.4	1	37.5	16	9.6	
P P6KE 30P	P6KE 30CP	5	25.6	28.5	30	33	1	41.5	14.5	9.7	
P6KE 30A	P6KE 30CA	5	25.6	28.5	30	31.5	1	41.5	14.5	9.7	
P P6KE 33P	P P6KE 33CP	5	28.2	31.4	33	36.3	1	45.7	13.1	9.8	
P6KE 33A	P6KE 33CA	5	28.2	31.4	33	34.7	1	45.7	13.1	9.8	
P P6KE 36P	P6KE 36CP	5	30.8	34.2	36	39.6	1	49.9	12	9.9	
P6KE 36A	P6KE 36CA	5	30.8	34.2	36	37.8	1	49.9	12	9.9	
P P6KE 39P	P P6KE 39CP	5	33.3	37.1	39	42.9	1	53.9	11.1	10.0	
P6KE 39A	P6KE 39CA	5	33.3	37.1	39	41	1	53.9	11.1	10.0	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.§ For bidirectional types P6KE 6V8CP → P6KE 11 CA, I_{RM} must be double that specified for unidirectional types.

P: Preferred device.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		$I_{RM} @ V_{RM}$ max		$V_{(BR)}^*$ (V)			@ I_R	$V_{(CL)} @ I_{pp}$ max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

600 W / 1 ms expo.

 $I_{FSM} = 100 A \cdot 10 ms$ for unidirectional

P6KE 43P	P6KE 43CP	5	36.8	40.9	43	47.3	1	59.3	10.1	10.1	CB-417
P6KE 43A	P6KE 43CA	5	36.8	40.9	43	45.2	1	59.3	10.1	10.1	
P6KE 47P	P6KE 47CP	5	40.2	44.7	47	51.7	1	64.8	9.3	10.1	
P6KE 47A	P6KE 47CA	5	40.2	44.7	47	49.4	1	64.8	9.3	10.1	
P6KE 51P	P6KE 51CP	5	43.6	48.5	51	56.1	1	70.1	8.6	10.2	
P6KE 51A	P6KE 51CA	5	43.6	48.5	51	53.6	1	70.1	8.6	10.2	
P6KE 56P	P6KE 56CP	5	47.8	53.2	56	61.6	1	77	7.8	10.3	
P6KE 56A	P6KE 56CA	5	47.8	53.2	56	58.8	1	77	7.8	10.3	
P6KE 62P	P6KE 62CP	5	53	58.9	62	68.2	1	85	7.1	10.4	
P6KE 62A	P6KE 62CA	5	53	58.9	62	65.1	1	85	7.1	10.4	
P6KE 68P	P6KE 68CP	5	58.1	64.6	68	74.8	1	92	6.5	10.4	
P6KE 68A	P6KE 68CA	5	58.1	64.6	68	71.4	1	92	6.5	10.4	
P6KE 75P	P6KE 75CP	5	64.1	71.3	75	82.5	1	103	5.8	10.5	
P6KE 75A	P6KE 75CA	5	64.1	71.3	75	78.8	1	103	5.8	10.5	
P6KE 82P	P6KE 82CP	5	70.1	77.9	82	90.2	1	113	5.3	10.5	
P6KE 82A	P6KE 82CA	5	70.1	77.9	82	86.1	1	113	5.3	10.5	
P6KE 91P	P6KE 91CP	5	77.8	86.5	91	100	1	125	4.8	10.6	
P6KE 91A	P6KE 91CA	5	77.8	86.5	91	95.5	1	125	4.8	10.6	
P6KE 100P	P6KE 100CP	5	85.5	95	100	110	1	137	4.4	10.6	
P6KE 100A	P6KE 100CA	5	85.5	95	100	105	1	137	4.4	10.6	
P6KE 110P	P6KE 110CP	5	94	105	110	121	1	152	3.9	10.7	
P6KE 110A	P6KE 110CA	5	94	105	110	116	1	152	3.9	10.7	
P6KE 120P	P6KE 120CP	5	102	114	120	132	1	165	3.6	10.7	
P6KE 120A	P6KE 120CA	5	102	114	120	126	1	165	3.6	10.7	
P6KE 130P	P6KE 130CP	5	111	124	130	143	1	179	3.4	10.7	
P6KE 130A	P6KE 130CA	5	111	124	130	137	1	179	3.4	10.7	
P6KE 150P	P6KE 150CP	5	128	143	150	165	1	207	2.9	10.8	
P6KE 150A	P6KE 150CA	5	128	143	150	158	1	207	2.9	10.8	
P6KE 160P	P6KE 160CP	5	136	152	160	176	1	219	2.7	10.8	
P6KE 160A	P6KE 160CA	5	136	152	160	168	1	219	2.7	10.8	
P6KE 170P	P6KE 170CP	5	145	161	170	187	1	234	2.6	10.8	
P6KE 170A	P6KE 170CA	5	145	161	170	179	1	234	2.6	10.8	
P6KE 180P	P6KE 180CP	5	154	171	180	198	1	246	2.4	10.8	
P6KE 180A	P6KE 180CA	5	154	171	180	189	1	246	2.4	10.8	
P6KE 200P	P6KE 200CP	5	171	190	200	220	1	274	2.2	10.8	
P6KE 200A	P6KE 200CA	5	171	190	200	210	1	274	2.2	10.8	
P6KE 220P	P6KE 220CP	5	188	209	220	242	1	301	2	10.8	
P6KE 220A	P6KE 220CA	5	188	209	220	231	1	301	2	10.8	
P6KE 250P	P6KE 250CP	5	213	237	250	275	1	344	2	11	
P6KE 250A	P6KE 250CA	5	213	237	250	263	1	344	2	11	
P6KE 280P	P6KE 280CP	5	239	266	280	308	1	384	2	11	
P6KE 280A	P6KE 280CA	5	239	266	280	294	1	384	2	11	
P6KE 300P	P6KE 300CP	5	256	285	300	330	1	414	1.6	11	
P6KE 300A	P6KE 300CA	5	256	285	300	315	1	414	1.6	11	
P6KE 320P	P6KE 320CP	5	273	304	320	352	1	438	1.6	11	
P6KE 320A	P6KE 320CA	5	273	304	320	336	1	438	1.6	11	
P6KE 350P	P6KE 350CP	5	299	332	350	385	1	482	1.6	11	
P6KE 350A	P6KE 350CA	5	299	332	350	368	1	482	1.6	11	
P6KE 400P	P6KE 400CP	5	342	380	400	440	1	548	1.3	11	
P6KE 400A	P6KE 400CA	5	342	380	400	420	1	548	1.3	11	
P6KE 440P	P6KE 440CP	5	376	418	440	484	1	603	1.3	11	
P6KE 440A	P6KE 440CA	5	376	418	440	462	1	603	1.3	11	

700 W / 1 ms expo.

 $I_{FSM} = 120 A \cdot 10 ms$ for unidirectional

P7T-10	P7T-10B	5	10	13	16	20	5	25	30	8.4	CB-417
P7T-27	P7T-27B	5	27	29.6	36	43.5	5	53	13	9.8	
P7T-43	P7T-43B	5	43	50	62	75	5	90	8	10.3	
P7T-110	P7T-110B	5	110	130	160	200	5	235	3	10.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

P : Preferred device.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		I_{RM} @ V_{RM} max		$V_{(BR)}^*$ (V)			@ I_R	$V_{(CL)}$ @ I_{pp} max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

1.5 kW / 1 ms expo.

 $I_{FSM} = 250 A \cdot 10 ms$ for unidirectional

P 1.5 KE 6V8 P	P 1.5 KE 6V8 CP	1000 §	5.8	6.45	6.8	7.48	10	10.5	143	5.7	CB-429
1.5 KE 6V8 A	1.5 KE 6V8 CA	1000 §	5.8	6.45	6.8	7.14	10	10.5	143	5.7	
P 1.5 KE 7V5 P	1.5 KE 7V5 CP	500 §	6.4	7.13	7.5	8.25	10	11.3	132	6.1	
1.5 KE 7V5 A	1.5 KE 7V5 CA	500 §	6.4	7.13	7.5	7.88	10	11.3	132	6.1	
1.5 KE 8V2 P	1.5 KE 8V2 CP	200 §	7.02	7.79	8.2	9.02	10	12.1	124	6.5	
1.5 KE 8V2 A	1.5 KE 8V2 CA	200 §	7.02	7.79	8.2	8.61	10	12.1	124	6.5	
1.5 KE 9V1 P	1.5 KE 9V1 CP	50 §	7.78	8.65	9.1	10	1	13.4	112	6.8	
1.5 KE 9V1 A	1.5 KE 9V1 CA	50 §	7.78	8.65	9.1	9.55	1	13.4	112	6.8	
P 1.5 KE 10 P	1.5 KE 10 CP	10 §	8.55	9.5	10	11	1	14.5	103	7.3	
1.5 KE 10 A	1.5 KE 10 CA	10 §	8.55	9.5	10	10.5	1	14.5	103	7.3	
1.5 KE 11 P	1.5 KE 11 CP	5 §	9.4	10.5	11	12.1	1	15.6	96	7.5	
1.5 KE 11 A	1.5 KE 11 CA	5 §	9.4	10.5	11	11.6	1	15.6	96	7.5	
P 1.5 KE 12 P	P 1.5 KE 12 CP	5	10.2	11.4	12	13.2	1	16.7	90	7.8	
1.5 KE 12 A	1.5 KE 12 CA	5	10.2	11.4	12	12.6	1	16.7	90	7.8	
P 1.5 KE 13 P	1.5 KE 13 CP	5	11.1	12.4	13	14.3	1	18.2	82	8.1	
1.5 KE 13 A	1.5 KE 13 CA	5	11.1	12.4	13	13.7	1	18.2	82	8.1	
1.5 KE 15 P	1.5 KE 15 CP	5	12.8	14.3	15	16.5	1	21.2	71	8.4	
1.5 KE 15 A	1.5 KE 15 CA	5	12.8	14.3	15	15.8	1	21.2	71	8.4	
P 1.5 KE 16 P	1.5 KE 16 CP	5	13.6	15.2	16	17.6	1	22.5	67	8.6	
1.5 KE 16 A	1.5 KE 16 CA	5	13.6	15.2	16	16.8	1	22.5	67	8.6	
P 1.5 KE 18 P	P 1.5 KE 18 CP	5	15.3	17.1	18	19.8	1	25.2	59.5	8.8	
1.5 KE 18 A	1.5 KE 18 CA	5	15.3	17.1	18	18.9	1	25.2	59.5	8.8	
P 1.5 KE 20 P	P 1.5 KE 20 CP	5	17.1	19	20	22	1	27.7	54	9	
1.5 KE 20 A	1.5 KE 20 CA	5	17.1	19	20	21	1	27.7	54	9	
P 1.5 KE 22 P	1.5 KE 22 CP	5	18.8	20.9	22	24.2	1	30.6	49	9.2	
1.5 KE 22 A	1.5 KE 22 CA	5	18.8	20.9	22	23.1	1	30.6	49	9.2	
1.5 KE 24 P	1.5 KE 24 CP	5	20.5	22.8	24	26.4	1	33.2	45	9.4	
1.5 KE 24 A	1.5 KE 24 CA	5	20.5	22.8	24	25.2	1	33.2	45	9.4	
P 1.5 KE 27 P	1.5 KE 27 CP	5	23.1	25.7	27	29.7	1	37.5	40	9.6	
1.5 KE 27 A	1.5 KE 27 CA	5	23.1	25.7	27	28.4	1	37.5	40	9.6	
P 1.5 KE 30 P	P 1.5 KE 30 CP	5	25.6	28.5	30	33	1	41.5	36	9.7	
1.5 KE 30 A	1.5 KE 30 CA	5	25.6	28.5	30	31.5	1	41.5	36	9.7	
P 1.5 KE 33 P	P 1.5 KE 33 CP	5	28.2	31.4	33	36.3	1	45.7	33	9.8	
1.5 KE 33 A	1.5 KE 33 CA	5	28.2	31.4	33	34.7	1	45.7	33	9.8	
P 1.5 KE 36 P	P 1.5 KE 36 CP	5	30.8	34.2	36	39.6	1	49.9	30	9.9	
1.5 KE 36 A	1.5 KE 36 CA	5	30.8	34.2	36	37.8	1	49.9	30	9.9	
P 1.5 KE 39 P	P 1.5 KE 39 CP	5	33.3	37.1	39	42.9	1	53.9	28	10	
1.5 KE 39 A	1.5 KE 39 CA	5	33.3	37.1	39	41	1	53.9	28	10	
P 1.5 KE 43 P	1.5 KE 43 CP	5	36.8	40.9	43	47.3	1	59.3	25.3	10.1	
1.5 KE 43 A	1.5 KE 43 CA	5	36.8	40.9	43	45.2	1	59.3	25.3	10.1	
P 1.5 KE 47 P	P 1.5 KE 47 CP	5	40.2	44.7	47	51.7	1	64.8	23.2	10.1	
1.5 KE 47 A	1.5 KE 47 CA	5	40.2	44.7	47	49.4	1	64.8	23.2	10.1	
P 1.5 KE 51 P	1.5 KE 51 CP	5	43.6	48.5	51	56.1	1	70.1	21.4	10.2	
1.5 KE 51 A	1.5 KE 51 CA	5	43.6	48.5	51	53.6	1	70.1	21.4	10.2	
1.5 KE 56 P	1.5 KE 56 CP	5	47.8	53.2	56	61.6	1	77	19.5	10.3	
1.5 KE 56 A	1.5 KE 56 CA	5	47.8	53.2	56	58.8	1	77	19.5	10.3	
1.5 KE 62 P	1.5 KE 62 CP	5	53	58.9	62	68.2	1	85	17.7	10.4	
1.5 KE 62 A	1.5 KE 62 CA	5	53	58.9	62	65.1	1	85	17.7	10.4	
P 1.5 KE 68 P	P 1.5 KE 68 CP	5	58.1	64.6	68	74.8	1	92	16.3	10.4	
1.5 KE 68 A	1.5 KE 68 CA	5	58.1	64.6	68	71.4	1	92	16.3	10.4	
1.5 KE 75 P	1.5 KE 75 CP	5	64.1	71.3	75	82.5	1	103	14.6	10.5	
1.5 KE 75 A	1.5 KE 75 CA	5	64.1	71.3	75	78.8	1	103	14.6	10.5	
P 1.5 KE 82 P	P 1.5 KE 82 CP	5	70.1	77.9	82	90.2	1	113	13.3	10.5	
1.5 KE 82 A	1.5 KE 82 CA	5	70.1	77.9	82	86.1	1	113	13.3	10.5	
1.5 KE 91 P	1.5 KE 91 CP	5	77.8	86.5	91	100	1	125	12	10.6	
1.5 KE 91 A	1.5 KE 91 CA	5	77.8	86.5	91	95.5	1	125	12	10.6	
1.5 KE 100 P	1.5 KE 100 CP	5	85.5	95	100	110	1	137	11	10.6	
1.5 KE 100 A	1.5 KE 100 CA	5	85.5	95	100	105	1	137	11	10.6	
1.5 KE 110 P	P 1.5 KE 110 CP	5	94	105	110	121	1	152	9.9	10.7	
1.5 KE 110 A	1.5 KE 110 CA	5	94	105	110	116	1	152	9.9	10.7	
1.5 KE 120 P	1.5 KE 120 CP	5	102	114	120	132	1	165	9.1	10.7	
1.5 KE 120 A	1.5 KE 120 CA	5	102	114	120	126	1	165	9.1	10.7	

* Pulse test $t_p \leq 50 ms$ $\delta \leq 2 \%$.§ For bidirectional types 1.5 KE 6V8 CP → 1.5 KE 11 CA. I_{RM} must be double that specified for unidirectional types.

P : Preferred device.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		$I_{RM} @ V_{RM}$ max		$V_{(BR)}^*$ @ I_R (V)				$V_{(CL)} @ I_{pp}$ max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

1.5 kW / 1 ms expo.
 $I_{FSM} = 250 A \cdot 10$ ms for unidirectional

1.5 KE 130 P	P 1.5 KE 130 CP	5	111	124	130	143	1	179	8.4	10.7	CB-429
1.5 KE 130 A	1.5 KE 130 CA	5	111	124	130	137	1	179	8.4	10.7	
1.5 KE 150 P	1.5 KE 150 CP	5	128	143	150	165	1	207	7.2	10.8	
1.5 KE 150 A	1.5 KE 150 CA	5	128	143	150	158	1	207	7.2	10.8	
1.5 KE 160 P	1.5 KE 160 CP	5	136	152	160	176	1	219	6.8	10.8	
1.5 KE 160 A	1.5 KE 160 CA	5	136	152	160	168	1	219	6.8	10.8	
P 1.5 KE 170 P	1.5 KE 170 CP	5	145	161	170	187	1	234	6.4	10.8	
1.5 KE 170 A	1.5 KE 170 CA	5	145	161	170	179	1	234	6.4	10.8	
P 1.5 KE 180 P	P 1.5 KE 180 CP	5	154	171	180	198	1	246	6.1	10.8	
1.5 KE 180 A	1.5 KE 180 CA	5	154	171	180	189	1	246	6.1	10.8	
P 1.5 KE 200 P	P 1.5 KE 200 CP	5	171	190	200	220	1	274	5.5	10.8	
1.5 KE 200 A	1.5 KE 200 CA	5	171	190	200	210	1	274	5.5	10.8	
1.5 KE 220 P	P 1.5 KE 220 CP	5	185	209	220	242	1	328	4.6	10.8	
1.5 KE 220 A	1.5 KE 220 CA	5	185	209	220	231	1	328	4.6	10.8	
P 1.5 KE 250 P	P 1.5 KE 250 CP	5	213	237	250	275	1	344	5.0	11	
1.5 KE 250 A	1.5 KE 250 CA	5	213	237	250	263	1	344	5.0	11	
1.5 KE 280 P	1.5 KE 280 CP	5	239	266	280	308	1	384	5.0	11	
1.5 KE 280 A	1.5 KE 280 CA	5	239	266	280	294	1	384	5.0	11	
P 1.5 KE 300 P	P 1.5 KE 300 CP	5	256	285	300	330	1	414	5.0	11	
1.5 KE 300 A	1.5 KE 300 CA	5	256	285	300	315	1	414	5.0	11	
1.5 KE 320 P	1.5 KE 320 CP	5	273	304	320	352	1	438	4.5	11	
1.5 KE 320 A	1.5 KE 320 CA	5	273	304	320	336	1	438	4.5	11	
P 1.5 KE 350 P	P 1.5 KE 350 CP	5	299	332	350	385	1	482	4.0	11	
1.5 KE 350 A	1.5 KE 350 CA	5	299	332	350	368	1	482	4.0	11	
P 1.5 KE 400 P	P 1.5 KE 400 CP	5	342	380	400	440	1	548	4.0	11	
1.5 KE 400 A	1.5 KE 400 CA	5	342	380	400	420	1	548	4.0	11	
P 1.5 KE 440 P	P 1.5 KE 440 CP	5	376	418	440	484	1	603	3.5	11	
1.5 KE 440 A	1.5 KE 440 CA	5	376	418	440	462	1	603	3.5	11	

1.5 kW / 1 ms expo.
 $I_{FSM} = 250 A \cdot 10$ ms

1N 5634		5	8.92	9.9	11	12.1	1	16.2	93	7.5	DO 13
1N 5634 A		5	9.4	10.5	11	11.6	1	15.6	96	7.5	
1N 5635		5	9.72	10.8	12	13.2	1	17.3	87	7.8	
1N 5635 A		5	10.2	11.4	12	12.6	1	16.7	90	7.8	
1N 5636		5	10.5	11.7	13	14.3	1	19	79	8.1	
1N 5636 A		5	11.1	12.4	13	13.7	1	18.2	82	8.1	
1N 5637		5	12.1	13.5	15	16.5	1	22	68	8.4	
1N 5637 A		5	12.8	14.3	15	15.8	1	21.2	71	8.4	
1N 5638		5	12.9	14.4	16	17.6	1	23.5	64	8.6	
1N 5638 A		5	13.6	15.2	16	16.8	1	22.5	67	8.6	
1N 5639		5	14.5	16.2	18	19.8	1	26.5	56.5	8.8	
1N 5639 A		5	15.3	17.1	18	18.9	1	25.2	59.5	8.8	
1N 5640		5	16.2	18	20	22	1	29.1	51.5	9	
1N 5640 A		5	17.1	19	20	21	1	27.7	54	9	
1N 5641		5	17.8	19.8	22	24.2	1	31.9	47	9.2	
1N 5641 A		5	18.8	20.9	22	23.1	1	30.6	49	9.2	
1N 5642		5	19.4	21.6	24	26.4	1	34.7	43	9.4	
1N 5642 A		5	20.5	22.8	24	25.2	1	33.2	45	9.4	
1N 5643		5	21.8	24.3	27	29.7	1	39.1	38.5	9.6	
1N 5643 A		5	23.1	25.7	27	28.4	1	37.5	40	9.6	
1N 5644		5	24.3	27	30	33	1	43.5	34.5	9.7	
1N 5644 A		5	25.6	28.5	30	31.5	1	41.4	36	9.7	
1N 5645		5	26.8	29.7	33	36.3	1	47.7	31.5	9.8	
1N 5645 A		5	28.2	31.4	33	34.7	1	45.7	33	9.8	
1N 5646		5	29.1	32.4	36	39.6	1	52	29	9.9	
1N 5646 A		5	30.8	34.2	36	37.8	1	49.9	30	9.9	
1N 5647		5	31.6	35.1	39	42.9	1	56.4	26.5	10	
1N 5647 A		5	33.3	37.1	39	41	1	53.9	28	10	

 * Pulse test $t_p \leq 50$ ms $\delta < 2\%$.

P : Preferred device.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		I_{RM} @ V_{RM} max		$V_{(BR)}^*$ (V)			@ I_R	$V_{(CL)}$ @ I_{pp} max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μ A)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}\text{C}$)	

1.5 kW / 1 ms expo.

IFSM = 250 A - 10 ms for unidirectional

1N 5648		5	34.8	38.7	43	47.3	1	61.9	24	10.1	DO 13
1N 5648 A		5	36.8	40.9	43	45.2	1	59.3	25.3	10.1	
1N 5649		5	38.1	42.3	47	51.7	1	67.8	22.2	10.1	
1N 5649 A		5	40.2	44.7	47	49.4	1	64.8	23.2	10.1	
1N 5650		5	41.3	45.9	51	56.1	1	73.5	20.4	10.2	
1N 5650 A		5	43.6	48.5	51	53.6	1	70.1	21.4	10.2	
1N 5651		5	45.4	50.4	56	61.6	1	80.5	18.6	10.3	
1N 5651 A		5	47.8	53.2	56	58.8	1	77	19.5	10.3	
1N 5652		5	50.2	55.8	62	68.2	1	89	16.9	10.4	
1N 5652 A		5	53	58.9	62	65.1	1	85	17.7	10.4	
1N 5653		5	55.1	61.2	68	74.8	1	98	15.3	10.4	
1N 5653 A		5	58.1	64.6	68	71.4	1	92	16.3	10.4	
1N 5654		5	60.7	67.5	75	82.5	1	108	13.9	10.5	
1N 5654 A		5	64.1	71.3	75	78.8	1	103	14.6	10.5	
1N 5655		5	66.4	73.8	82	90.2	1	118	12.7	10.5	
1N 5655 A		5	70.1	77.9	82	86.1	1	113	13.3	10.5	
1N 5656		5	73.7	81.9	91	100	1	131	11.4	10.6	
1N 5656 A		5	77.8	86.5	91	95.5	1	125	12	10.6	
1N 5657		5	81	90	100	110	1	144	10.4	10.6	
1N 5657 A		5	85.5	95	100	105	1	137	11	10.6	
1N 5658		5	89.2	99	110	121	1	158	9.5	10.7	
1N 5658 A		5	94	105	110	116	1	152	9.9	10.7	
1N 5659		5	97.2	108	120	132	1	173	8.7	10.7	
1N 5659 A		5	102	114	120	126	1	165	9.1	10.7	
1N 5660		5	105	117	130	143	1	187	8	10.7	
1N 5660 A		5	111	124	130	137	1	179	8.4	10.7	
1N 5661		5	121	135	150	165	1	215	7	10.8	
1N 5661 A		5	128	143	150	158	1	207	7.2	10.8	
1N 5662		5	130	144	160	176	1	230	6.5	10.8	
1N 5662 A		5	136	152	160	168	1	219	6.8	10.8	
1N 5663		5	138	153	170	187	1	244	6.2	10.8	
1N 5663 A		5	145	161	170	179	1	234	6.4	10.8	
1N 5664		5	146	162	180	198	1	258	5.8	10.8	
1N 5664 A		5	154	171	180	189	1	246	6.1	10.8	
1N 5665		5	162	180	200	220	1	287	5.2	10.8	
1N 5665 A		5	171	190	200	210	1	274	5.5	10.8	

1.5 kW / 1 ms expo.

1N 6040		10	8.5	9.9	11	12.1	1	16.2	93	7.5	DO 13
1N 6040 A		10	9.0	10.5	11	11.6	1	15.6	96	7.5	
1N 6041		5	9.0	10.8	12	13.2	1	17.3	87	7.8	
1N 6041 A		5	10.0	11.4	12	12.6	1	16.7	90	7.8	
1N 6042		5	10.0	11.7	13	14.3	1	19	79	8.1	
1N 6042 A		5	11.0	12.4	13	13.7	1	18.2	82	8.1	
1N 6043		5	11.0	13.5	15	16.7	1	22	68	8.4	
1N 6043 A		5	12.0	14.3	15	15.8	1	21.2	71	8.4	
1N 6044		5	12.0	14.4	16	17.6	1	23.5	64	8.6	
1N 6044 A		5	13.0	15.2	16	16.8	1	22.5	67	8.6	
1N 6045		5	14.0	16.2	18	19.8	1	26.5	56.5	8.8	
1N 6045 A		5	15.0	17.1	18	18.9	1	25.2	59.5	8.8	
1N 6046		5	16.0	18	20	22	1	29.1	51.5	9	
1N 6046 A		5	17.0	19	20	21	1	27.7	54	9	
1N 6047		5	17.0	19.8	22	24.2	1	31.9	47	9.2	
1N 6047 A		5	18.0	20.9	22	23.1	1	30.6	49	9.2	
1N 6048		5	19.0	21.6	24	26.4	1	34.7	43	9.4	
1N 6048 A		5	20.0	22.8	24	25.2	1	33.2	45	9.4	
1N 6049		5	21.0	24.3	27	29.7	1	39.1	38.5	9.6	
1N 6049 A		5	22.0	25.7	27	28.4	1	37.5	40	9.6	
1N 6050		5	24.0	27	30	33	1	43.5	34.5	9.7	
1N 6050 A		5	25.0	28.5	30	31.5	1	41.4	36	9.7	

* Pulse test $t_p \leq 50$ ms $\delta < 2\%$.

PROTECTION

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		I_{RM} @ V_{RM} max		$V_{(BR)}^*$ (V)			@ I_R	$V_{(CL)}$ @ I_{pp} max 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

1.5 kW / 1 ms expo.

	1N 6051	5	26.0	29.7	33	36.3	1	47.7	31.5	9.8	DO 13
	1N 6051 A	5	28.0	31.4	33	34.7	1	45.7	33	9.8	
	1N 6052	5	29.0	32.4	36	39.6	1	52	29	9.9	
	1N 6052 A	5	30.0	34.2	36	37.8	1	49.9	30	9.9	
	1N 6053	5	31.0	35.1	39	42.9	1	56.4	26.5	10	
	1N 6053 A	5	33.0	37.1	39	41	1	53.9	28	10	
	1N 6054	5	34.0	38.7	43	47.3	1	61.9	24	10.1	
	1N 6054 A	5	36.0	40.9	43	45.2	1	59.3	25.3	10.1	
	1N 6055	5	38.0	42.3	47	51.7	1	67.8	22.2	10.1	
	1N 6055 A	5	40.0	44.7	47	49.4	1	64.8	23.2	10.1	
	1N 6056	5	41.0	45.9	51	56.1	1	73.5	20.4	10.2	
	1N 6056 A	5	43.0	48.5	51	53.6	1	70.1	21.4	10.2	
	1N 6057	5	45.0	50.4	56	61.6	1	80.5	18.6	10.3	
	1N 6057 A	5	47.0	53.2	56	58.8	1	77	19.5	10.3	
	1N 6058	5	48.0	55.8	62	68.2	1	89	16.9	10.4	
	1N 6058 A	5	53.0	58.9	62	65.1	1	85	17.7	10.4	
	1N 6059	5	55.0	61.2	68	74.8	1	98	15.3	10.4 [#]	
	1N 6059 A	5	58.0	64.6	68	71.4	1	92	16.3	10.4	
	1N 6060	5	60.0	67.5	75	82.5	1	108	13.9	10.5	
	1N 6060 A	5	64.0	71.3	75	78.8	1	103	14.6	10.5	
	1N 6061	5	66.0	73.8	82	90.2	1	118	12.7	10.5	
	1N 6061 A	5	70.0	77.9	82	86.1	1	113	13.3	10.5	
	1N 6062	5	73.0	81.9	91	100.1	1	131	11.4	10.6	
	1N 6062 A	5	75.0	86.5	91	95.5	1	125	12	10.6	
	1N 6063	5	81.0	90	100	110	1	144	10.4	10.6	
	1N 6063 A	5	82.0	95	100	105	1	137	11	10.6	
	1N 6064	5	90.0	99	110	121	1	158	9.5	10.7	
	1N 6064 A	5	94.0	105	110	116	1	152	9.9	10.7	
	1N 6065	5	95.0	108	120	132	1	176	8.5	10.7	
	1N 6065 A	5	100	114	120	126	1	168	8.9	10.7	
	1N 6066	5	105	117	130	143	1	191	7.8	10.7	
	1N 6066 A	5	110	124	130	137	1	182	8.2	10.7	
	1N 6067	5	121	135	150	165	1	223	6.7	10.8	
	1N 6067 A	5	128	143	150	158	1	213	7.0	10.8	
	1N 6068	5	137	153	170	187	1	258	5.8	10.8	
	1N 6068 A	5	145	162	170	179	1	245	6.1	10.8	
	1N 6069	5	145	162	180	198	1	274	5.5	10.8	
	1N 6069 A	5	150	171	180	189	1	261	5.7	10.8	
	1N 6070	5	155	171	190	210	1	292	5.1	10.8	
	1N 6070 A	5	160	181	190	200	1	278	5.4	10.8	
	1N 6071	5	165	180	200	220	1	308	4.9	10.8	
	1N 6071 A	5	170	190	200	210	1	294	5.1	10.8	
	1N 6072	5	175	198	220	242	1	344	4.3	10.8	
	1N 6072 A	5	185	209	220	231	1	328	4.6	10.8	

5 kW / 1 ms expo.

 $I_{FSM} = 500 A - 10 ms$ for unidirectional

BZW 50-10	BZW 50-10B	5	10	11.1	12.4	13.6	1	18.8	266	7.8	AG
BZW 50-12	BZW 50-12B	5	12	13.3	14.8	16.3	1	22	227	8.4	
BZW 50-15	BZW 50-15B	5	15	16.6	18.5	20.4	1	26.9	186	8.8	
BZW 50-18	BZW 50-18B	5	18	20	22.2	24.4	1	32.2	155	9.2	
BZW 50-22	BZW 50-22B	5	22	24.4	27.1	29.8	1	39.4	127	9.6	
BZW 50-27	BZW 50-27B	5	27	30	33.3	36.6	1	48.3	103	9.8	
BZW 50-33	BZW 50-33B	5	33	36.6	40.7	44.7	1	59	85	10	
BZW 50-39	BZW 50-39B	5	39	43.3	48.1	53	1	69.4	72	10.1	
BZW 50-47	BZW 50-47B	5	47	52	57.8	63.6	1	83.2	60.1	10.3	
BZW 50-56	BZW 50-56B	5	56	62.2	69.1	76	1	99.6	50	10.4	
BZW 50-68	BZW 50-68B	5	68	75.6	84	92.4	1	121	41	10.5	
BZW 50-82	BZW 50-82B	5	82	91	101.2	111	1	145	34	10.6	
BZW 50-100	BZW 50-100B	5	100	111	123.5	136	1	179	28	10.7	
BZW 50-120	BZW 50-120B	5	120	133	148.1	163	1	215	23	10.8	
BZW 50-150	BZW 50-150B	5	150	166	185.2	204	1	269	19	10.8	
BZW 50-180	BZW 50-180B	5	180	200	222	244	1	322	16	10.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

PROTECTION

5 VOLT TRANSIENT VOLTAGE SUPPRESSOR «TRANSIL» FOR MICROPROCESSOR, INTEGRATED CIRCUIT C-MOS, MOS PROTECTION

Unidirectional type	$I_{RM} @ V_{RM} \text{ max}$		$V_{(BR)}^* @ I_R \text{ min}$		$V_{(CL)} @ I_{pp} \text{ max}$ 1 ms expo		$V_{(CL)} @ I_{pp} \text{ max}$ 1 ms expo		$V_{(CL)} @ I_{pp} \text{ max}$ 1 ms expo		$\alpha_T \text{ max}$	Package
	(μA)	(V)	(V)	(mA)	(V)	(A)	(V)	(A)	(V)	(A)	($10^{-4}/^\circ\text{C}$)	

1.5 KW / 1 ms expo.

 $I_{FSM} = 250 \text{ A} \cdot 10 \text{ ms}$

P 1N 5908	300	5	6.0	1	7.6	30	8.0	60	8.5	120	5.7	CB-429
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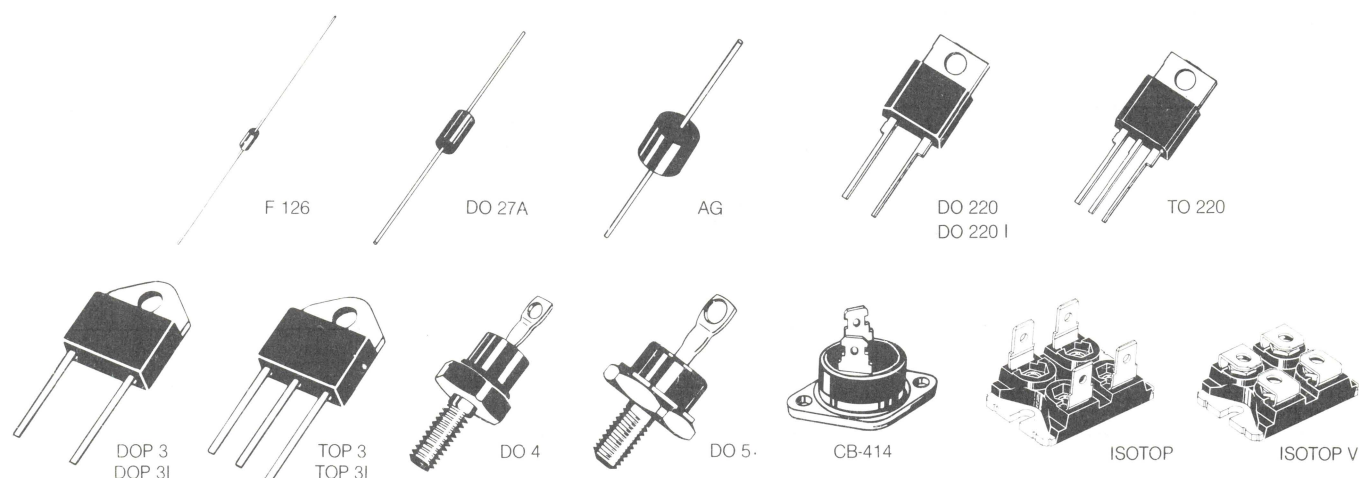
* Pulse test $t_p \leq 50 \text{ ms}$ $\delta < 2\%$.
P : Preferred device.

TRANSIL ARRAY

Type	$I_{RM} @ V_{RM} \text{ max}$		$V_{BR} @ I_R \text{ min}$		$V_{CL} @ I_{pp} \text{ max}$ 8-20 μs expo		ESD expo (1)	C max (2)	Package
	(μA)	(V)	(V)	(mA)	(V)	(A)	(kV)	(pF)	
TH6P04T6V5CL	50	6	6.5	1	12	40	25	500	20 pin DILP
TH6P04T25CL	10	24	25	1	38	40	25	300	

(1) MIL STD 883C — Method 3015-2.
(2) Input capacitance : Input pin to ground at 5V bias.

RECTIFIER DIODES



HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

$V_{RRM} = 50, 100, 150, 200 \text{ V}$ $t_{rr} \text{ max } 35 \text{ ns}$

Type	I_O (A)	V_{RRM} (V)	I_{FSM} 10 ms (A)	V_F / I_F $T_j 100^\circ\text{C}$ max (V) (A)	I_R/V_{RRM} $T_j 100^\circ\text{C}$ max (mA)	t_{rr} (1) max (ns)	Package
BYW 100- 50 BYW 100-100 BYW 100-150 BYW 100-200	1.5	50 100 150 200	50	0.85 1.5	0.5	35 See note 1	F 126
BYW 98- 50 BYW 98-100 BYW 98-150 BYW 98-200	3	50 100 150 200	70	0.85 3	1	35 See note 1	DO 27 A
BYW 29- 50 A BYW 29-100 A BYW 29-150 A BYW 29-200 A	8	50 100 150 200	80	0.85 5	0.6	35	DO 220
BYW 80- 50 A BYW 80-100 A BYW 80-150 A BYW 80-200 A	8	50 100 150 200	100	0.85 7	1	35	DO 220
BYW 80PI- 50 BYW 80PI-100 BYW 80PI-150 BYW 80PI-200	8	50 100 150 200	100	0.85 7	1	35	DO 220 I
BYW 81- 50, (R) BYW 81-100, (R) BYW 81-150, (R) BYW 81-200, (R)	15	50 100 150 200	200	0.85 12	1.5	35	DO 4 (2)
BYW 81P- 50 A BYW 81P-100 A BYW 81P-150 A BYW 81P-200 A	15	50 100 150 200	200	0.85 12	1.5	35	DO 220
BYW 81PI- 50 BYW 81PI-100 BYW 81PI-150 BYW 81PI-200	15	50 100 150 200	200	0.85 12	1.5	35	DO 220I

(1) $I_F = 1 \text{ A}$ $V_R = 30 \text{ V}$ $di_F/dt = -50 \text{ A}/\mu\text{s}$ $I_{rr} = 0.2 I_{RM}$

(2) 10-32 UNF - M5 thread available on request → Type number + suffix M.

Type number : cathode to case.

Type number + suffix R : anode to case.

Note 1 : $t_{rr} = 25 \text{ ns}$ @ $I_F = 0.5 \text{ A}$ $di_F/dt = 100 \text{ A}/\mu\text{s}$
 $I_R = 1 \text{ A}$ $I_{rr} = 0.25 \text{ A}$.

N : New product.

RECTIFIER DIODES

HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES (Continued)

 $V_{RRM} = 50, 100, 150, 200 \text{ V}$ $t_{rr} \text{ max } 35...80 \text{ ns}$

Type	I_O (A)	V_{RRM} (V)	I_{FSM} 10 ms (A)	V_F $T_j 100^\circ\text{C}$ max (V)	I_F (A)	I_R/V_{RRM} $T_j 100^\circ\text{C}$ max (mA)	t_{rr} (1) max (ns)	Package
BYW 51- 50 A BYW 51-100 A BYW 51-150 A BYW 51-200 A	20 (2 × 10)	50 100 150 200	100	0.89	8	1	35	TO 220
BYW 77- 50, (R) BYW 77-100, (R) BYW 77-150, (R) BYW 77-200, (R)	25	50 100 150 200	500	0.85	20	2.5	50	DO 4 (2)
BYW 77P- 50 BYW 77P-100 BYW 77P-150 BYW 77P-200	25	50 100 150 200	500	0.85	20	2.5	50	DOP 3
BYW 77PI- 50 BYW 77PI-100 BYW 77PI-150 BYW 77PI-200	25	50 100 150 200	500	0.85	20	2.5	50	DOP 3I
BYW 99P- 50 BYW 99P-100 BYW 99P-150 BYW 99P-200	30 (2 × 15)	50 100 150 200	200	0.85	12	1.5	35	TOP 3
BYW 99PI- 50 BYW 99PI-100 BYW 99PI-150 BYW 99PI-200	30 (2 × 15)	50 100 150 200	200	0.85	12	1.5	35	TOP 3I
BYW 92- 50, (R) BYW 92-100, (R) BYW 92-150, (R) BYW 92-200, (R)	35	50 100 150 200	500	0.92	35	5	50	DO 5 (3)
BYW 78- 50, (R) BYW 78-100, (R) BYW 78-150, (R) BYW 78-200, (R)	50	50 100 150 200	1500	0.85	50	5	60	DO 5 (3)
BYV 52 PI- 50 BYV 52 PI-100 BYV 52 PI-150 BYV 52 PI-200	60 (2 × 30)	50 100 150 200	500	0.9	30	2.5	50	TOP 3I
BYV 52- 50 BYV 52-100 BYV 52-150 BYV 52-200	60 (2 × 30)	50 100 150 200	500	0.9	30	2.5	50	TOP 3
BYW 08- 50, (R) BYW 08-100, (R) BYW 08-150, (R) BYW 08-200, (R)	80	50 100 150 200	1500	0.92	80	5	60	DO 5 (3)
BYV 54(V)- 50 BYV 54(V)-100 BYV 54(V)-150 BYV 54(V)-200	100 (2 × 50)	50 100 150 200	800	0.85	50	5	60	ISOTOP See note 1
BYV 255(V)- 50 BYV 255(V)-100 BYV 255(V)-150 BYV 255(V)-200	200 (2 × 100)	50 100 150 200	1600	0.75 0.85 1.40	50 100 500	10	80	ISOTOP See note 1

(1) $I_F = 1 \text{ A}$ $V_R = 30 \text{ V}$ $di_F/dt = -50 \text{ A}/\mu\text{s}$ $I_{rr} = 0.2 I_{RM}$

(2) 10-32 UNF - M5 thread available on request → Type number + suffix M.

(3) 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

Type number : cathode to case.

Type number + suffix R : anode to case.

Note 1 : BYV 54 → ISOTOP (Faston version).

BYV 54V → ISOTOP V (Screw version).

N : New product.

RECTIFIER DIODES

«SUPERSWITCH 2» ULTRA-FAST RECOVERY RECTIFIER DIODES < 100 A

 $V_{RRM} = 200, 300, 400 \text{ V}$ $t_{rr} \text{ max } 25...50 \text{ ns}$

Type	I_O (A)	V_{RRM} (V)	I_{FSM} 10 ms (A)	V_F / I_F max (V) (A)	I_R/V_{RRM} $T_j = 100^\circ\text{C}$ max (mA)	$t_{rr} (1)$ max (ns)	t_{IRM} $T_j = 100^\circ\text{C}$ max (ns)	I_{RM} $T_j = 100^\circ\text{C}$ max (A)	Package
BYT 01-200 BYT 01-300 BYT 01-400	1	200 300 400	30	1.5 1	0.5	25	50	2	F 126
BYT 03-200 BYT 03-300 BYT 03-400	3	200 300 400	60	1.5 3	0.5	25	50	2	DO 27 A
BYT 08P-200 A BYT 08P-300 A BYT 08P-400 A	8	200 300 400	100	1.5 8	2.5	35	75	2.2	DO 220
BYT 08PI-200 BYT 08PI-300 BYT 08PI-400	8	200 300 400	100	1.5 8	2.5	35	75	2.2	DO 220 I
BYT 12-200, (R) BYT 12-300, (R) BYT 12-400, (R)	12	200 300 400	200	1.5 12	2.5	50	75	3.75	DO 4 (2)
BYT 16P-200 BYT 16P-300 BYT 16P-400	16 (2 × 8)	200 300 400	100	1.5 8	2.5	35	75	2.2	TO 220
BYT 30PI-200 BYT 30PI-300 BYT 30PI-400	30	200 300 400	350	1.5 30	6	50	75	9	DOP 3I
BYT 30P-200 BYT 30P-300 BYT 30P-400	30	200 300 400	350	1.5 30	6	50	75	9	DOP 3
BYT 30-200, (R) BYT 30-300, (R) BYT 30-400, (R)	30	200 300 400	500	1.5 30	6	50	75	9	DO 5 (3)
BYT 230PI(V)-200 BYT 230PI(V)-300 BYT 230PI(V)-400	60 (2 × 30)	200 300 400	350	1.5 30	6	50	75	9	ISOTOP See note 1
BYT 60P-200 BYT 60P-300 BYT 60P-400	60	200 300 400	550	1.5 60	10	50	75	18	DOP 3
BYT 60-200, (R) BYT 60-300, (R) BYT 60-400, (R)	60	200 300 400	800	1.5 60	10	50	75	18	DO 5 (3)
N BYT 261PI(V)-400	120 (2 × 60)	400	600	1.4 60	6	50	75	18	ISOTOP See note 1

(1) $I_F = 0.5 \text{ A}$ $I_R = 1 \text{ A}$ $I_{rr} = 0.25 \text{ A}$.

(2) 10-32 UNF : M5 thread available on request → Type number + suffix M.

(3) 1/4"-28 UNF : M6 thread available on request → Type number + suffix M.

Type number : cathode to case.

Type number + suffix R : anode to case.

Note 1 : BYT 230PI → ISOTOP (Faston version).
BYT 230PIV → ISOTOP V (Screw version).

N : New product.

RECTIFIER DIODES

«SUPERSWITCH 2» ULTRA-FAST RECOVERY RECTIFIER DIODES < 100 A

V_{RRM} = 600, 800 V t_{rr} ≤ 65 ns

	Type	I _O	V _{RRM}	I _{FSM} 10 ms	V _F / I _F	I _R /V _{RRM} T _j = 100°C	t _{rr} (1)	t _{IRM} T _j = 100°C	I _{RM} T _j = 100°C	Package
		(A)	(V)	(A)	max (V) (A)	max (mA)	max (ns)	max (ns)	max (A)	
N N	BYT 08P-600 BYT 08P-800	8	600 800	50	1.8 8	2	50	160	4	DO 220
	BYT 08PI-600 BYT 08PI-800	8	600 800	50	1.8 8	2	50	160	4	DO 220 I
N N	BYT 12PI-600 BYT 12PI-800	12	600 800	75	1.9 12	2.5	50	160	6	DO 220 I
	BYT 12P-600 A BYT 12P-800 A	12	600 800	75	1.9 12	2.5	50	160	6	DO 220
N N	BYT 12-600 BYT 12-800	12	600 800	75	1.9 12	2.5	50	160	6	DO 4 (2)
	BYT 30P-600 BYT 30P-800	30	600 800	200	1.9 30	5	55	160	15	DOP 3
N N	BYT 30PI-600 BYT 30PI-800	30	600 800	200	1.9 30	5	55	160	15	DOP 3I
	BYT 30-600 BYT 30-800	30	600 800	200	1.9 30	5	55	160	15	DO 5 (3)
N N	BYT 60-600 BYT 60-800	60	600 800	400	1.8 60	6	65	160	30	DO 5 (3)
	BYT 230PI(V)-600 BYT 230PI(V)-800	60 2 × 30	600 800	200	1.9 30	5	55	160	15	ISOTOP See note 1
N N	BYT 261PI(V)-600 BYT 261PI(V)-800	120 (2 × 60)	600 800	400	1.8 60	6	65	160	30	ISOTOP See note 1

(1) I_F = 0.5 A I_R = 1 A I_{rr} = 0.25 A.

(2) 10-32 UNF · M5 thread available on request → Type number + suffix M.

(3) 1/4"·28 UNF · M6 thread available on request → Type number + suffix M.

Note 1 : BYT 230PI → ISOTOP (Faston version).
BYT 230PIV → ISOTOP V (Screw version).**N** : New product.

RECTIFIER DIODES

«SUPERSWITCH 2» ULTRA-FAST RECOVERY RECTIFIER DIODES < 100 A

V_{RRM} = 1000, 1200 V t_{rr} ≤ 70 ns

	Type	I _O (A)	V _{RRM} (V)	I _{FSM} 10 ms (A)	V _F / I _F max (V) (A)	I _R /V _{RRM} T _j = 100°C max (mA)	t _{rr} (1) max (ns)	t _{IRM} T _j = 100°C max (ns)	I _{RM} T _j = 100°C max (A)	Package
N	BYT 08P-1000	8	1000	50	1.8 8	2	65	200	5.2	DO 220
N	BYT 08PI-1000	8	1000	50	1.8 8	2	65	200	5.2	DO 220 I
	BYT 12-1000	12	1000	75	1.9 12	2.5	65	200	7.8	DO 4 (2)
	BYT 12P-1000 A	12	1000	75	1.9 12	2.5	65	200	7.8	DO 220
	BYT 12PI-1000	12	1000	75	1.9 12	2.5	65	200	7.8	DO 220 I
	BYT 30-1000	30	1000	200	1.9 30	5	70	200	19.5	DO 5 (3)
	BYT 30P-1000	30	1000	200	1.9 30	5	70	200	19.5	DOP 3
	BYT 30PI-1000	30	1000	200	1.9 30	5	70	200	19.5	DOP 3I
N	BYT 60-1000	60	1000	400	1.8 60	6	70	200	40	DO 5
	BYT 230PI(V)-1000	60 (2 × 30)	1000	200	1.9 30	5	70	200	19.5	ISOTOP See note 1
N	BYT 230PI(V)-1200	60 (2 × 30)	1200	200	1.8 30	5	70	200	20	ISOTOP See note 1
N	BYT 261PI(V)-1000	120 (2 × 60)	1000	400	1.8 60	6	70	200	40	ISOTOP See note 1

(1) I_F = 0.5 A I_R = 1 A I_{rr} = 0.25 A.

(2) 10-32 UNF - M5 thread available on request → Type number + suffix M.

(3) 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

Note 1 : BYT 230PI → ISOTOP (Faston version).

BYT 230PIV → ISOTOP V (Screw version).

N : New product.

RECTIFIER DIODES

FAST RECOVERY RECTIFIER DIODES < 100 A

Type	I_O (A)	V_{RRM} (V)	I_{FSM} 10 ms (A)	V_F / I_F max (V) (A)	I_R/V_{RRM} max (mA)	t_{rr} max (ns)	t_{rr} @ $I_F = 0.5$ A $I_R = 1$ A (ns)	Package
PLQ 08 PLQ 1	1	80 100	20	1.1 1	0.5 $T_{amb} = 100^\circ\text{C}$	50 (1)	35	F 126
BYT 11-600 BYT 11-800 BYT 11-1000	1	600 800 1000	35	1.3 1	0.02	—	100	F 126
PFR 305 PFR 310	3	50 100	135	1.0 3	0.01	—	50	DO 27 A
PFR 850 PFR 851 PFR 852 PFR 854 PFR 856	3	50 100 200 400 600	150	1.25 3	0.01	150 (2) 150 (2) 150 (2) 150 (2) 200 (2)	75	DO 27 A
BYT 13-600 BYT 13-800 BYT 13-1000	3	600 800 1000	100	1.3 3	0.02	150 (3)	150	DO 27 A

(1) $I_F = 1$ A — $V_R = 30$ V — $di_F/dt = -50$ A/ μ s — $I_{rr} = 0.2 I_{RM}$.
 (2) $I_F = 1$ A — $V_R = 30$ V — $di_F/dt = -25$ A/ μ s — $I_{rr} = 0.2 I_{RM}$.
 (3) $I_F = 0.5$ A — $I_R = 1$ A — $I_{rr} = 0.25$ A.

Type	I_O (A)	V_{RRM} (V)	I_{FSM} 10 ms (A)	V_F / I_F max (V) (A)	I_R/V_{RRM} $T_j = 100^\circ\text{C}$ max (mA)	t_{rr} (1) max (ns)	Package
BYT 71-100 A BYT 71-400 A BYT 71-600 A BYT 71-800 A	6	100 400 600 800	90	1.4 6	1	300	DO 220
1N 3879, (R) 1N 3880, (R) 1N 3881, (R) 1N 3882, (R) 1N 3883, (R)	6	50 100 200 300 400	150	1.4 6	1	200	DO 4*
BY 233-200 A BY 233-400 A BY 233-600 A	8	200 400 600	100	1.5 8	1	150	DO 220
ESM 765-100 A ESM 765-200 A ESM 765-400 A ESM 765-600 A ESM 765-800 A	10	100 200 400 600 800	120	1.4 10	1	300	DO 220

(1) $I_F = 1$ A $V_R = 30$ V $di_F/dt = -15$ A/ μ s — $I_{rr} = 0.2 I_{RM}$
 * 10-32 UNF - M5 thread available on request → Type number + suffix M.

Type number : cathode to case.
 Type number + suffix R : anode to case.

RECTIFIER DIODES

FAST RECOVERY RECTIFIER DIODES < 100 A (Continued)

Type	I_O (A)	V_{RRM} (V)	I_{FSM} 10 ms (A)	V_F / I_F max (V) (A)	I_R/V_{RRM} $T_j = 100^\circ C$ max (mA)	t_{rr} (1) max (ns)	Package
ESM 765PI-600 ESM 765PI-800	10	600 800	120	1.4 10	1	300	DO 220 I
BYX 61- 50, (R) BYX 61-100, (R) BYX 61-200, (R) BYX 61-300, (R) BYX 61-400, (R)	12	50 100 200 300 400	150	1.5 12	3	100	DO 4*
1N 3889, (R) 1N 3890, (R) 1N 3891, (R) 1N 3892, (R) 1N 3893, (R) BYX 62-600, (R)	12	50 100 200 300 400 600	150	1.4 12	3	200	DO 4*
1N 3899, (R) 1N 3900, (R) 1N 3901, (R) 1N 3902, (R) 1N 3903, (R) BYX 63-600, (R)	20	50 100 200 300 400 600	225	1.4 20	6	200	DO 5**
BYX 65- 50, (R) BYX 65-100, (R) BYX 65-200, (R) BYX 65-300, (R) BYX 65-400, (R)	30	50 100 200 300 400	300	1.5 30	10	100	DO 5**
1N 3909, (R) 1N 3910, (R) 1N 3911, (R) 1N 3912, (R) 1N 3913, (R) BYX 64-600, (R)	30	50 100 200 300 400 600	300	1.4 30	6	200	DO 5**
ESM 243- 50, (R) ESM 243-100, (R) ESM 243-200, (R) ESM 243-300, (R) ESM 243-400, (R)	60	50 100 200 300 400	800	1.5 60	10	100	DO 5***
ESM 244- 50, (R) ESM 244-100, (R) ESM 244-200, (R) ESM 244-300, (R) ESM 244-400, (R) ESM 244-500, (R) ESM 244-600, (R)	60	50 100 200 300 400 500 600	800	1.5 60	6	200	DO 5***

(1) $I_F = 1\text{ A}$ $V_R = 30\text{ V}$ $di_F/dt = -15\text{ A}/\mu\text{s}$ — $I_{rr} = 0.2 I_{RM}$

* 10-32 UNF - M5 thread available on request → Type number + suffix M.

** 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

*** M6 thread.

Type number : cathode to case.

Type number + suffix R : anode to case.

RECTIFIER DIODES

RECTIFIER DIODES < 100 A

Type	I _O (A)	V _{RRM} (V)	I _{FSM} 10 ms (A)	V _F / I _F max (V) (A)	I _R / T _{amb} @ V _{RRM} max (mA) (°C)	Package
BY 214- 50 BY 214-100 BY 214-200 BY 214-400 BY 214-600 BY 214-800 (1) BY 214-1000 (1)	6	50 100 200 400 600 800 1000	400	1.2 20	0.25 100	AG
1N 1341 B, (R) 1N 1342 B, (R) 1N 1344 B, (R) 1N 1345 B, (R) 1N 1346 B, (R) 1N 1347 B, (R) 1N 1348 B, (R) 1N 3988, (R) 1N 3990, (R)	6	50 100 200 300 400 500 600 800 1000	200	1.2 20	0.5 150	DO 4*
BY 239-200 A BY 239-400 A BY 239-600 A BY 239-800 A	10	200 400 600 800	140	1.45 30	0.5 125	DO 220
BYW 88- 50, (R) BYW 88- 100, (R) BYW 88- 200, (R) BYW 88- 300, (R) BYW 88- 400, (R) BYW 88- 500, (R) BYW 88- 600, (R) BYW 88- 800, (R) BYW 88-1000, (R)	12	50 100 200 300 400 500 600 800 1000	230	1.25 35	3 125	DO 4*
1N 248 B, (R) 1N 249 B, (R) 1N 250 B, (R) 1N 1195 A, (R) 1N 1196 A, (R) 1N 1197 A, (R) 1N 1198 A, (R) RN 820, (R) RN 1120, (R)	20	50 100 200 300 400 500 600 800 1000	450	1.5 70	5 150	DO 5**
1N 1183, (R) 1N 1184, (R) 1N 1186, (R) 1N 1187, (R) 1N 1188, (R) 1N 1189, (R) 1N 1190, (R) 1N 3766, (R) 1N 3768, (R)	40	50 100 200 300 400 500 600 800 1000	700	1.5 110	5 150	DO 5**
DRA 402 DRA 404 DRA 406 DRA 408 DRA 410	40	200 400 600 800 1000	800	1.5 120	1 125	CB-414

* 10-32 UNF - M5 thread available on request → Type number + suffix M.

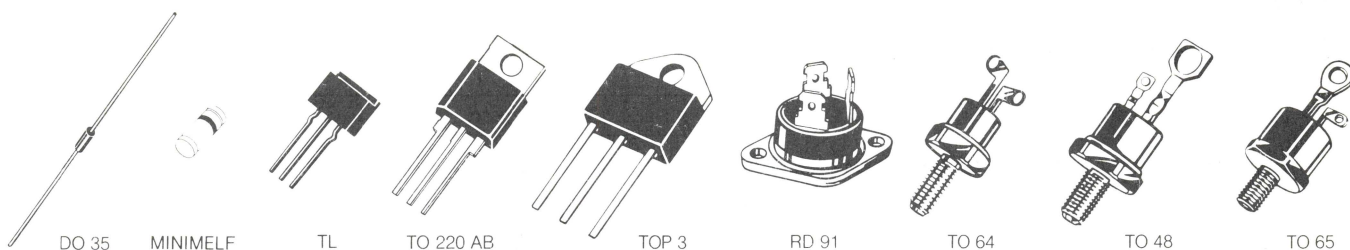
(1) 800 V / 1000 V : on request.

** 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

Type number + cathode to case.

Type number + suffix R : anode to case.

MEDIUM POWER THYRISTORS & TRIACS < 100 A



UL HOMOLOGATION PRODUCTS

Type	Case		
	TO 220 AB	TOP 3	RD 91
THYRISTORS	TXN 054 → 1004 TXN 056 → 1006 TXN 058 → 1008,G,K TXN 0510 → 1010 TXN 0512 → 1012	BTW 68-200 → 1200 BTW 69-200 → 1200	BTW 66-200 → 1200 BTW 67-200 → 1200
TRIACS	Logic level triacs		
	BTA 06-200 → 800 SW BTA 06-200 → 800 TW BTA 08-200 → 800 SW BTA 08-200 → 800 TW		
	Snubberless triacs		
	BTA 06-200 → 800 AW,BW,CW ★ BTA 08-200 → 800 AW,BW,CW ★ BTA 10-200 → 800 AW,BW,CW BTA 12-200 → 800 AW,BW,CW BTA 16-200 → 800 AW,BW,CW		
	Sensitive gate triacs		
	BTA 04-200 → 800 A,D,S,T BTA 06-200 → 800 A,D,S,T BTA 08-200 → 800 A,S		
	Standard triacs		
	BTA 06-200 → 800 B,C BTA 08-200 → 800 B,C BTA 10-200 → 800 B,C BTA 12-200 → 800 B,C BTA 13-200 → 800 B BTA 16-200 → 800 B	BTA 26-200 → 800 A,B BTA 41-200 → 800 A,B	BTA 25-200 → 800 A,B BTA 40-200 → 800 A,B
	Special triacs for light dimmers		
	BTA 04-200 → 600 GP BTA 06-200 → 600 GP		
	Alternistors		
	TXDV 208 → 808 TXDV 212 → 812	TPDV 125 → 1225 TPDV 140 → 1240	TODV 125 → 1225 TODV 140 → 1240

★ Pending UL recognition (E81734).

MEDIUM POWER THYRISTORS & TRIACS < 100 A

THYRISTORS

PLASTIC SENSITIVE GATE THYRISTORS

Type See NOTE	I _O (A)	V _{RRM} = V _{DRM} (V)	I _{TSM} (A)	I _{RM} @ V _{RRM} I _{DM} @ V _{DRM} T _j max max (mA)	T _{amb} = 25°C				dv/dt* @ 67% V _{DRM} T _j max typ (V/μs)	di/dt max (A/μs)	Package
					V _{GT} max (V)	I _{GT} max (mA)	I _H * max (mA)	V _{TM} / I _{TM} max (V) (A)			

4 Arms / T_{connex.} = 25°C T_j = 110°C

TLS 106-05 → 6 TLS 107-05 → 6	2.5	50 → 600	35	0.3	1.5	0.2 (1) 0.5 (2)	5	1.9 4	10	100	TL
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4 Arms / T_{case} = 75°C T_j = 110°C

TYS 406-05 → 8 TYS 407-05 → 8	2.5	50 → 800	50	0.5	1.5	0.2 (1) 0.5 (2)	6	1.6 8	5	50	TO 220 AB
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6 Arms / T_{case} = 75°C T_j = 110°C

TYS 606-05 → 8 TYS 607-05 → 8	3.8	50 → 800	50	0.5	1.5	0.2 (1) 0.5 (2)	6	1.89 12	5	50	TO 220 AB
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* R_{GK} = 1 kΩ. (1) TLS 106, TYS 406 - 606 series. (2) TLS 107, TYS 407 - 607 series.

NOTE: V_{DRM} : 50 · 100 · 200 · 400 · 600 — 800 only for TYS series.

ORDERING INFORMATION · EXAMPLE : TYS 606-4 for 400 V.

STANDARD THYRISTORS PLASTIC CASE

Type	I _O (A)	V _{RRM} = V _{DRM} (V)	I _{TSM} (A)	I _{RM} @ V _{RRM} I _{DM} @ V _{DRM} T _j max max (mA)	T _{amb} = 25°C				dv/dt @ 67% V _{DRM} T _j max min (V/μs)	di/dt max (A/μs)	Package
					V _{GT} max (V)	I _{GT} max (mA)	I _H typ (mA)	V _{TM} / I _{TM} max (V) (A)			

3 Arms / T_{connex.} = 50°C T_j = 110°C I² t = 24.5 A² s

TL 1006 TL 2006 TL 4006 TL 6006 TL 8006	2	100 200 400 600 800	70	0.75	1.5	15	20	1.9 6	200	100	TL
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MEDIUM POWER THYRISTORS & TRIACS < 100 A

STANDARD THYRISTORS PLASTIC CASE

Type See NOTE	I _O (A)	V _{RRM} = V _{DRM} (V)	I _{TSM} (A)	I _{RM} @ V _{RRM} I _{DM} @ V _{DRM} T _j max max (mA)	T _{amb} = 25°C				dv/dt @ 67% V _{DRM} T _j max min (V/μs)	di/dt max (A/μs)	Package
					V _{GT} max (V)	I _{GT} max (mA)	I _H max (mA)	V _{TM} / I _{TM} max (V) (A)			

4 Arms / T_{case} = 90°C T_j = 110°C I²t = 24.5 A²s

TXN / TYN 054 → 1004	2.5	50 → 1000	70	1	1.5	15	30	1.8 8	200	50	TO 220 AB
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6 Arms / T_{case} = 80°C T_j = 110°C I²t = 32 A²s

TXN / TYN 056 → 1006	3.8	50 → 1000	80	1	1.5	15	30	1.6 12	200	50	TO 220 AB
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8 Arms / T_{case} = 75°C T_j = 110°C I²t = 32 A²s

TXN / TYN 058 → 1008 *	5	50 → 1000	80	1	1.5	Without suffix : 15	30	1.6 16	Without suffix : 200	50	TO 220 AB
						suffix G : 25	45		suffix G : 500		
						suffix K : 40	60		suffix K : 750		

10 Arms / T_{case} = 75°C T_j = 110°C I²t = 50 A²s

TXN / TYN 0510 → 1010	6.4	50 → 1000	100	1	1.5	15	30	1.6 20	200	50	TO 220 AB
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12 Arms / T_{case} = 80°C T_j = 125°C I²t = 72 A²s

TXN / TYN 0512 → 1012	8	50 → 1000	120	2 (1) 3 (2)	1.5	15	30	1.6 24	200	100	TO 220 AB
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16 Arms / T_{case} = 90°C T_j = 125°C I²t = 128 A²s

TYN 0516 → 816	10	50 → 800	160	2	1.5	25	40	1.6 32	500	100	TO 220 AB
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20 Arms / T_{case} = 85°C T_j = 125°C I²t = 200 A²s

TYN 682 TYN 683 TYN 685 TYN 688 TYN 690 TYN 692	13	50 100 200 400 600 800	200	2	1.5	25	40	1.4 50	500	100	TO 220 AB
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25 Arms / T_{case} = 90°C T_j = 125°C I²t = 450 (1) - 310 (2) A²s

TYN 225 → 1225	16	200 → 1200	300 (1) 250 (2)	2.5 (1) 5 (2)	1.5	40	50	1.6 50	500 (1) 250 (2)	100	TO 220 AB
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★ With suffixes G, K.

(1) V_{DRM} ≤ 800 V. (2) V_{DRM} ≥ 1000 V.

**NOTE : TXN insulated (insulating voltage = 2500 V_{RMS}).
TYN uninsulated.**

ORDERING INFORMATION - EXAMPLE : TYN 408 G for 400 V.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

STANDARD THYRISTORS PLASTIC CASE

Type See NOTE	I_O (A)	$V_{RRM} = V_{DRM}$ (V)	I_{TSM} (A)	$I_{RM} @ V_{RRM}$ $I_{DM} @ V_{DRM}$ $T_j \text{ max}$ max (mA)	$T_{amb} = 25^\circ\text{C}$				$dv/dt @ 67\% V_{DRM}$ $T_j \text{ max}$ min (V/ μs)	di/dt max (A/ μs)	Package
					V_{GT} max (V)	I_{GT} max (mA)	I_H max (mA)	V_{TM} / I_{TM} max (V) (A)			

30 Arms / $T_{case} = 75^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $I^2 t = 800^{(1)} \cdot 450^{(2)} \text{ A}^2 \text{ s}$

BTW 68-200 \rightarrow 1200	16	200 \rightarrow 1200	400 (1) 300 (2)	3	1.5	50	75	2.1 60	500 (1) 250 (2)	100	TOP 3
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30 Arms / $T_{case} = 65^\circ\text{C}$ $T_j = 110^\circ\text{C}$ $I^2 t = 800 \text{ A}^2 \text{ s}$

BTW 66-200 \rightarrow 1200	20	200 \rightarrow 1200	400	3	1.5	50	75	2.2 60	500 (1) 250 (2)	100	RD 91
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35 Arms / $T_{case} = 75^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $I^2 t = 800^{(1)} \cdot 450^{(2)} \text{ A}^2 \text{ s}$

BTW 68-200 N \rightarrow 1200 N	22	200 \rightarrow 1200	400 (1) 300 (2)	3	1.5	50	76	2.25 70	500 (1) 250 (2)	100	TOP 3
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40 Arms / $T_{case} = 65^\circ\text{C}$ $T_j = 110^\circ\text{C}$ $I^2 t = 1250 \text{ A}^2 \text{ s}$

BTW 67-200 \rightarrow 1200	25	200 \rightarrow 1200	500	6	1.5	80	150	2 80	500 (1) 250 (2)	100	RD 91
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50 Arms / $T_{case} = 70^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $I^2 t = 1250^{(1)} \cdot 800^{(2)} \text{ A}^2 \text{ s}$

BTW 69-200 \rightarrow 1200	32	200 \rightarrow 1200	500 (1) 400 (2)	6	1.5	80	150	1.9 100	500 (1) 250 (2)	100	TOP 3
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55 Arms / $T_{case} = 70^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $I^2 t = 1250^{(1)} \cdot 800^{(2)} \text{ A}^2 \text{ s}$

BTW 69-200 N \rightarrow 1200 N	35	200 \rightarrow 1200	500 (1) 400 (2)	6	1.5	80	150	2 110	500 (1) 250 (2)	100	TOP 3
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70 Arms / $T_{case} = 70^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $I^2 t = 2450 \text{ A}^2 \text{ s}$

BTW 70-200 N \rightarrow 600 N	45	200 \rightarrow 600	700	3	1.5	80	150	2.2 140	500	100	TOP 3
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(1) $V_{DRM} \leq 800 \text{ V}$. (2) $V_{DRM} \geq 1000 \text{ V}$.

NOTE: BTW insulated (insulating voltage = 2500 V_{RMS}).

BTW + suffix N uninsulated.

V_{DRM} : 200 · 400 · 600 · 800 · 1000 · 1200.

ORDERING INFORMATION · EXAMPLE: BTW 69-800 N.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

STANDARD THYRISTORS METAL CASE

Type	I _O	V _{RRM} = V _{DRM}	I _{TSM}	I _{RM} @ V _{RRM} I _{DM} @ V _{DRM} T _j max max (mA)	T _{amb} = 25°C				dv/dt @ 67% V _{DRM} T _j max min (V/μs)	di/dt max (A/μs)	Package
					V _{GT}	I _{GT}	I _H	V _{TM} / I _{TM}			
See NOTE	(A)	(V)	(A)		max (V)	max (mA)	max (mA)	max (V) (A)			

7.4 Arms / T_{case} = 90°C T_j = 125°C I²t = 32 A²s

2N 1770 → 2N 1778 2N 2619	4.7	25 → 500 600	80	2	1.5	15	30	1.85 15	200	50	TO 64*
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25 Arms / T_{case} = 75°C T_j = 125°C I²t = 200 A²s

BTW 39-50 → 1200	16	50 → 1200	200	5	1.5	80	20 §	2.2 50	200	100	TO 48**
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25 Arms / T_{case} = 70°C T_j = 125°C I²t = 200 A²s

2N 681 2N 682 2N 683 2N 685 2N 687 2N 688 2N 689 2N 690 2N 691 2N 692	16	25 50 100 200 300 400 500 600 700 800	200	3	1.5	40	20 §	2 50	200	20	TO 48**
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35 Arms / T_{case} = 75°C T_j = 125°C I²t = 545 A²s

2N 5204 → 2N 5207	22.5	600 → 1200	330	3.3	1.5	40	100	2.3 70	200	100	TO 48**
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50 Arms / T_{case} = 85°C T_j = 125°C I²t = 1250 A²s

BTW 48-200 → 1200	32	200 → 1200	500	5	1.5	60	30 §	1.8 100	200	100	TO 48**
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63 Arms / T_{case} = 105°C T_j = 125°C I²t = 4150 A²s

BTW 50-100 → 1200	40	100 → 1200	910	12	1.5	150	50 §	3 500	200	100	TO 65***
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NOTE : ORDERING INFORMATION - EXAMPLE : BTW 48-600,
2N 5205 for 800 V.

§ : Typical value.

* 10-32 UNF.

** 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

*** 1/4"-28 UNF.

PLASTIC AND METAL CASE THYRISTORS FOR OVERVOLTAGE PROTECTION

Type	I _O	V _{RRM} = V _{DRM}	I _{TSM}	I _{RM} * @ V _{RRM} I _{DM} * @ V _{DRM} max (mA)	T _{amb} = 25°C					dv/dt* @ V _{DRM} min (V/μs)	Package
					V _{GT}	I _{GT}	I _H	V _{TM} / I _{TM}	di/dt		
	(A)	(V)	(A)		max (V)	max (mA)	max (mA)	max (V) (A)	max (A/μs)		

12 Arms / T_{case} = 75°C T_j = 125°C I²t (10 ms) = 450 A²s

TYP 212 TYP 512 TYP 1012 TYP 2012	8	25 50 100 200	300 10ms 750 1ms expo	2	1.5	30	50	1.5 50	100	200	TO 220 AB
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25 Arms / T_{case} = 75°C T_j = 125°C I²t (10 ms) = 2450 A²s

TSP 225 TSP 525 TSP 1025	16	25 50 100	700 10ms 145 250ms	10	1.5	50	50	1.5 140	100	200	TO 48**
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* @ T_j max.

** 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

METAL CASE FAST SWITCHING THYRISTORS

Type See NOTE	I _O (A)	V _{RRM} = V _{DRM} (V)	I _{TSM} (A)	T _{amb} = 25°C					dv/dt* @ 67% V _{DRM} min (V/μs)	I _{RM} * @ V _{RRM} I _{DM} * @ V _{DRM} max (mA)	t _q * max (μs)	Package
				V _{TM} / I _{TM} max (V) (A)	V _{GT} max (V)	I _{GT} max (mA)	I _H max (mA)	di/dt max (A/μs)				

25 Arms / T_{case} = 60°C T_j = 125°C I²t = 200 A²s

I_T = 10 A

BTW 30-600 → 1200	16	600 → 1200	200	3	50	1.5	200	70 §	200	200	6 **	12 (2) 20 (3)	TO 48 (4)
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35 Arms / T_{case} = 40°C T_j = 120°C I²t = 200 A²s

I_T = 10 A

2N 3654 → 2N 3658	22.5	50 → 400	200	2.05	25	1.5	180	70 §	400	200	6	10	TO 48 (4)
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35 Arms / T_{case} = 40°C T_j = 120°C I²t = 200 A²s

I_T = 10 A

2N 3649 → 2N 3653	22.5	50 → 400	200	2.05	25	1.5	180	70 §	400	200	6	15	TO 48 (4)
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63 Arms / T_{case} = 65°C T_j = 125°C I²t = 4230 A²s

I_T = 150 A

TGF 149-100 A → 600 A	40	100 → 600	920	3	500	1.5	150	200	200	200	12	A = 20 (1)	TO 65 (5)
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63 Arms / T_{case} = 65°C T_j = 125°C I²t = 2245 A²s

I_T = 150 A

TGF 148-600 B → 1200 B	40	600 → 1200	670	4	500	1.5	150	200	200	200	12	B = 40 (1)	TO 65 (5)
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* @ T_j max.

** @ T_j = 100°C.

NOTE : ORDERING INFORMATION — EXAMPLE : TGF 149-300 A,
2N 3651 for 200 V.

§ : Typical value.

(1) Please, consult us for lower t_q values.

(2) For BTW 30-600, BTW 30-800.

(3) For BTW 30-1000, BTW 30-1200.

(4) 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

(5) 1/4"-28 UNF.

TRIACS

LOGIC LEVEL TRIACS

Type See NOTE 1	V _{DRM} ± (V)	I _{TSM} (A)	I _{DRM} @ V _{DRM} @ T _j max max (mA)	Suffix	I _{GT} (mA) max				I _H max (mA)	V _{TM} / I _{TM}		(di/dt) _C @ (dv/dt) _C @ T _j max min (A/ms)	dv/dt @ 67% V _{DRM} @ T _j max min (V/μs)	Package
					I	II	III	IV		max (V)	max (A)			

6 Arms / T_{case} = 80°C T_j = 110°C I²t = 36 A²s

0.1 V/μs See Note 2

BTA / BTB 06	200 → 800	85	0.5	TW SW	5 10	5 10	5 10		15 25	1.75	8.5	2.7 3.5	1.3 2.7	20 50	TO 220 AB
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8 Arms / T_{case} = 80°C T_j = 110°C I²t = 36 A²s

0.1 V/μs See Note 2

BTA / BTB 08	200 → 800	85	0.5	TW SW	5 10	5 10	5 10		15 25	1.75	11	3.5 4.5	1.8 3.5	20 50	TO 220 AB
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NOTE 1 : BTA insulated (insulating voltage = 2500 V_{RMS}). BTB uninsulated.
V_{DRM} : 200 - 400 - 600 - 700 - 800 V.

ORDERING INFORMATION - EXAMPLE : BTA 06-400 TW.

NOTE 2 : With suffix TW = 20 V/μs. With suffix SW = 50 V/μs.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

SNUBBERLESS TRIACS

Type	V_{DRM} ±	I_{TSM}	I_{DRM} @ V_{DRM} @ T_j max max (mA)	Suffix	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		(di/dt) _C without snubber @ T_j max min (A/ms)	dv/dt @ 67% V_{DRM} @ T_j max min (V/μs)	Package
					I	II	III	IV		max	max			
See NOTE	(V)	(A)			++	+-	--	-+						

6 Arms / $T_{case} = 95^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 18 A^2s$

BTA 06-200	200			AW	75	75	75		75			8	750	TO 220 AB
BTA 06-400	400			BW	50	50	50		50	1.75	8.5	5	500	
BTA 06-600	600	60	2	CW	35	35	35		35			3.5	250	
BTA 06-700	700													
BTA 06-800	800													

6 Arms / $T_{case} = 100^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 18 A^2s$

BTB 06-200	200			AW	75	75	75		75			8	750	TO 220 AB
BTB 06-400	400			BW	50	50	50		50	1.75	8.5	5	500	
BTB 06-600	600	60	2	CW	35	35	35		35			3.5	250	
BTB 06-700	700													
BTB 06-800	800													

8 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 32 A^2s$

BTA 08-200	200			AW	75	75	75		75			10	750	TO 220 AB
BTA 08-400	400			BW	50	50	50		50	1.75	11	7	500	
BTA 08-600	600	80	2	CW	35	35	35		35			4.5	250	
BTA 08-700	700													
BTA 08-800	800													

8 Arms / $T_{case} = 95^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 32 A^2s$

BTB 08-200	200			AW	75	75	75		75			10	750	TO 220 AB
BTB 08-400	400			BW	50	50	50		50	1.75	11	7	500	
BTB 08-600	600	80	2	CW	35	35	35		35			4.5	250	
BTB 08-700	700													
BTB 08-800	800													

10 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 50 A^2s$

BTA 10-200	200			AW	75	75	75		75			12	750	TO 220 AB
BTA 10-400	400			BW	50	50	50		50	1.65	14	9	500	
BTA 10-600	600	100	2	CW	35	35	35		35			5.5	250	
BTA 10-700	700													
BTA 10-800	800													

10 Arms / $T_{case} = 100^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 50 A^2s$

BTB 10-200	200			AW	75	75	75		75			12	750	TO 220 AB
BTB 10-400	400			BW	50	50	50		50	1.65	14	9	500	
BTB 10-600	600	100	2	CW	35	35	35		35			5.5	250	
BTB 10-700	700													
BTB 10-800	800													

12 Arms / $T_{case} = 85^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 72 A^2s$

BTA 12-200	200			AW	75	75	75		75			16	750	TO 220 AB
BTA 12-400	400			BW	50	50	50		50	1.6	17	12	500	
BTA 12-600	600	120	2	CW	35	35	35		35			6.5	250	
BTA 12-700	700													
BTA 12-800	800													

12 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I_{2t} = 72 A^2s$

BTB 12-200	200			AW	75	75	75		75			16	750	TO 220 AB
BTB 12-400	400			BW	50	50	50		50	1.6	17	12	500	
BTB 12-600	600	120	2	CW	35	35	35		35			6.5	250	
BTB 12-700	700													
BTB 12-800	800													

**NOTE : BTA insulated (insulating voltage = 2500 V_{RMS}).
BTB uninsulated.**

MEDIUM POWER THYRISTORS & TRIACS < 100 A

SNUBBERLESS TRIACS (Continued)

Type	V_{DRM} ±	I_{TSM}	I_{DRM} @ V_{DRM} @ T_j max max (mA)	Suffix	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		$(di/dt)_C$ without snubber @ T_j max min (A/ms)	dv/dt @ 67% V_{DRM} @ T_j max min (V/μs)	Package
					I	II	III	IV		max (V)	(A)			
See NOTE	(V)	(A)			++	+-	--	-+						

16 Arms / $T_{case} = 80^\circ C$ $T_j = 125^\circ C$ $I^2t = 112 A^2s$

BTA 16-200	200			AW	75	75	75		75			21	750	TO 220 AB
BTA 16-400	400			BW	50	50	50		50	1.5	22.5	14	500	
BTA 16-600	600	150	2	CW	35	35	35		35			8.5	250	
BTA 16-700	700													
BTA 16-800	800													

16 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I^2t = 112 A^2s$

BTB 16-200	200			AW	75	75	75		75			21	750	TO 220 AB
BTB 16-400	400			BW	50	50	50		50	1.5	22.5	14	500	
BTB 16-600	600	150	2	CW	35	35	35		35			8.5	250	
BTB 16-700	700													
BTB 16-800	800													

NOTE : BTA insulated (insulating voltage = 2500 V_{RMS}).
BTB uninsulated.

PLASTIC CASE SENSITIVE GATE TRIACS

Type	V_{DRM} ±	I_{TSM}	I_{DRM}^* @ V_{DRM} max (mA)	Suffix	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		$(dv/dt)_C^*$ typ (V/μs)	dv/dt^* @ 67% V_{DRM} typ (V/μs)	Package
					I	II	III	IV		max (V)	(A)			
See NOTE	(V)	(A)			++	+-	--	-+						

1 Arms / $T_{connex.} = 40^\circ C$ $T_j = 110^\circ C$

TLC 111 T,D,S,A	200			T	5	5	5	5	15			1	10	TL
TLC 221 T,D,S,A	400	15	0.75	D	5	5	5	10	15	1.8	1.4	1	10	
TLC 331 T,D,S,A	600			S	10	10	10	10	25			5	20	
TLC 381 T,D,S,A	700			A	10	10	10	25	25			5	20	

3 Arms / $T_{connex.} = 40^\circ C$ $T_j = 110^\circ C$

TLC 116 T,D,S,A	200			T	5	5	5	5	15			1	10	TL
TLC 226 T,D,S,A	400	30	0.75	D	5	5	5	10	15	1.85	4	1	10	
TLC 336 T,D,S,A	600			S	10	10	10	10	25			5	20	
TLC 386 T,D,S,A	700			A	10	10	10	25	25			5	20	

4 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$

BTA / BTB 04	200→800	50	0.75	T	5	5	5	5	15				10	TO 220 AB
				D	5	5	5	10	15	1.65	5.5		10	
				S	10	10	10	10	25				10 min	
				A	10	10	10	25	25				10 min	

6 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$

BTA / BTB 06	200→800	60	0.75	T	5	5	5	5	15				10	TO 220 AB
				D	5	5	5	10	15	1.65	8.5		10	
				S	10	10	10	10	25				10 min	
				A	10	10	10	25	25				10 min	

8 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$

BTA / BTB 08	200→800	80	0.5	S	10	10	10	10	25	1.75	11		10 min	TO 220 AB
				A	10	10	10	25	25					

* @ $T_j = 110^\circ C$.

NOTE : BTA insulated (insulating voltage = 2500 V_{RMS}). BTB uninsulated.

V_{DRM} : 200 · 400 · 600 · 700 · 800 V.

ORDERING INFORMATION · EXAMPLE : BTA 04-400 T.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

PLASTIC CASE STANDARD TRIACS

Type	V_{DRM} ±	I_{TSM}	I_{DRM}^* @ V_{DRM} max (mA)	Suffix	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		$(dv/dt)_C^*$ min (V/μs)	dv/dt^* @ 67% V_{DRM} min (V/μs)	Package
					I	II	III	IV		max (V)	(A)			
See NOTE	(V)	(A)			++	+-	--	-+						

1 Arms / $T_{connex.} = 40^\circ C$ $T_j = 110^\circ C$ $I^2 t = 1.125 A^2 s$

TLC 111 B TLC 221 B TLC 331 B TLC 381 B	200 400 600 700	15	0.75	B	25	25	25	50	8 typ	1.8	1.4	5	20	TL
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3 Arms / $T_{connex.} = 40^\circ C$ $T_j = 110^\circ C$ $I^2 t = 4.5 A^2 s$

TLC 116 B TLC 226 B TLC 336 B TLC 386 B	200 400 600 700	30	0.75	B	25	25	25	50	8 typ	1.85	4	5	20	TL
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6 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$ $I^2 t = 18 A^2 s$

BTA / BTB 06	200→800	60	0.5	B C	50 25	50 25	50 25	100 50	50 25	1.65	8.5	10 5	250 100	TO 220 AB
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8 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$ $I^2 t = 32 A^2 s$

BTA / BTB 08	200→800	80	0.5	B C	50 25	50 25	50 25	100 50	50 25	1.75	11	10 5	250 100	TO 220 AB
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10 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$ $I^2 t = 50 A^2 s$

BTA / BTB 10	200→800	100	0.5	B C	50 25	50 25	50 25	100 50	50 25	1.5	14	10 5	250 100	TO 220 AB
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12 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$ $I^2 t = 72 A^2 s$

BTA / BTB 12	200→800	120	0.5	B C	50 25	50 25	50 25	100 50	50 25	1.5	17	10 5	250 100	TO 220 AB
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12 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I^2 t = 112.5 A^2 s$

BTA 13 B	200→800	150	2	B	50	50	50	75	50	1.4	17	10	500	TO 220 AB
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12 Arms / $T_{case} = 100^\circ C$ $T_j = 125^\circ C$ $I^2 t = 112.5 A^2 s$

BTB 13 B	200→800	150	2	B	50	50	50	75	50	1.4	17	10	500	TO 220 AB
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15 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I^2 t = 112.5 A^2 s$

BTB 15 B	200→800	150	2	B	50	50	50	75	50	1.5	21	10	250	TO 220 AB
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* @ T_j max.

NOTE : BTA insulated (insulating voltage = 2500 V_{RMS}).

BTB uninsulated.

V_{DRM} : 200 - 400 - 600 - 700 - 800 V.

ORDERING INFORMATION - EXAMPLE : BTA 06-400 B.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

PLASTIC CASE STANDARD TRIACS

Type See NOTE	V_{DRM} \pm (V)	I_{TSM} (A)	I_{DRM}^* @ V_{DRM} max (mA)	Suffix	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		$(dv/dt)_C^*$ min (V/ μ s)	dv/dt^* @ 67% V_{DRM} min (V/ μ s)	Package
					I	II	III	IV		max	(A)			
					++	+-	--	-+						

16 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I^2 t = 128 A^2 s$

BTB 16 B	200→800	160	0.5	B	50	50	50	100	50	1.6	22.5	10	250	TO 220 AB
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16 Arms / $T_{case} = 80^\circ C$ $T_j = 125^\circ C$ $I^2 t = 128 A^2 s$

BTA 16 B	200→800	160	0.5	B	50	50	50	100	50	1.6	22.5	10	250	TO 220 AB
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25 Arms / $T_{case} = 75^\circ C$ $T_j = 125^\circ C$ $I^2 t = 200 A^2 s$

BTB 24 B	200→800	200	1	B	50	50	50	100	50	1.8	35	10	250	TO 220 AB
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25 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I^2 t = 312.5 A^2 s$

BTA 26 B, A	200→800	250	6	B A	50 100	50 100	50 100	100 150	80 100	1.7	35	5 10	250	TOP 3
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30 Arms / $T_{case} = 90^\circ C$ $T_j = 125^\circ C$ $I^2 t = 312.5 A^2 s$

BTB 26 B, A	200→800	250	6	B A	50 100	50 100	50 100	100 150	80 100	1.7	35	5 10	250	TOP 3
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30 Arms / $T_{case} = 80^\circ C$ $T_j = 125^\circ C$ $I^2 t = 312.5 A^2 s$

BTA 25 B, A	200→800	250	6	B A	50 100	50 100	50 100	100 150	80 100	1.8	42	5 10	250	RD 91
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40 Arms / $T_{case} = 75^\circ C$ $T_j = 125^\circ C$ $I^2 t = 450 A^2 s$

BTA 40 B, A	200→800	300	6	B A	50 100	50 100	50 100	100 150	80 100	1.8	60	5 10	250	RD 91
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40 Arms / $T_{case} = 75^\circ C$ $T_j = 125^\circ C$ $I^2 t = 450 A^2 s$

BTA 41 B, A	200→800	300	6	B A	50 100	50 100	50 100	100 150	80 100	1.8	60	5 10	250	TOP 3
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45 Arms / $T_{case} = 80^\circ C$ $T_j = 125^\circ C$ $I^2 t = 450 A^2 s$

BTB 41 B, A	200→800	300	6	B A	50 100	50 100	50 100	100 150	80 100	1.8	60	5 10	250	TOP 3
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* @ T_j max.

NOTE : BTA insulated (insulating voltage = 2500 V_{RMS}).

BTB uninsulated.

V_{DRM} : 200 · 400 · 600 · 700 · 800 V.

ORDERING INFORMATION · EXAMPLE : BTA 16-400 B.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

METAL CASE STANDARD TRIACS

Type	V_{DRM} ± (V)	I_{TSM} (A)	I_{DRM}^* @ V_{DRM} max (mA)	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		$(dv/dt)_C^*$ min (V/μs)	dv/dt^* @ 67% V_{DRM} min (V/μs)	Package
				I ++	II +-	III --	IV -+		max (V)	(A)			

25 Arms / $T_{case} = 60^\circ C$ $T_j = 100^\circ C$ $I^2 t = 312.5 A^2 s$

TRAL 1125 D	200	250	3	100	100	100	150	100	2	35	10	250	TO 48**
TRAL 2225 D	400												
TRAL 3325 D	600												
TRAL 3825 D	700												

35 Arms / $T_{case} = 60^\circ C$ $T_j = 110^\circ C$ $I^2 t = 450 A^2 s$

TRAL 1135 D	200	300	4	100	150	100	150	100	2	53	10	250	TO 48**
TRAL 2235 D	400												
TRAL 3335 D	600												
TRAL 3835 D	700												

60 Arms / $T_{case} = 75^\circ C$ $T_j = 125^\circ C$ $I^2 t = 1250 A^2 s$

TGAL 602	200	500	10	100	150	100	150	100	2	100	10	250	TO 65***
TGAL 604	400												
TGAL 606	600												
TGAL 608	800												
TGAL 610	1000												

* @ T_j max.

** 1/4"-28 UNF - M6 thread available on request → Type number + suffix M.

*** 1/4"-28 UNF.

SPECIAL TRIACS FOR LIGHT DIMMERS

Type	V_{DRM} ± (V)	I_{TSM} (A)	I_{DRM}^* @ V_{DRM} max (mA)	Suffix	I_{GT} (mA) max				I_H max (mA)	V_{TM} / I_{TM}		$(dv/dt)_C^*$ typ (V/μs)	dv/dt^* @ 67% V_{DRM} min (V/μs)	Package
					I ++	II +-	III --	IV -+		max (V)	(A)			

4 Arms / $T_{case} = 75^\circ C$ $T_j = 110^\circ C$ $I^2 t = 12.5 A^2 s$

BTA 04	200 → 600	50	0.5	GP	50	50	50	75	13	1.65	5.5	1	10	TO 220 AB
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6 Arms / $T_{case} = 85^\circ C$ $T_j = 110^\circ C$ $I^2 t = 50 A^2 s$

BTA 06	200 → 600	100	0.5	GP	50	50	50	75	13	1.4	8.5	10	30	TO 220 AB
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* T_j max.

NOTE : BTA insulated (insulating voltage = 2500 V_{RMS}).

V_{DRM} : 200 - 400 - 600.

ORDERING INFORMATION - EXAMPLE : BTA 04-400 GP.

MEDIUM POWER THYRISTORS & TRIACS < 100 A

«ALTERNISTORS» - BIDIRECTIONAL DEVICES FOR REACTIVE CIRCUITS
 AND FREQUENCIES UP TO 400 Hz

Type	V _{DRM} ± (V)	I _{TSM} (A)	I _{DRM} * @ V _{DRM} max (mA)	I _{GT} (mA) max				I _H typ (mA)	V _{TM} / I _{TM}		(di/dt) _C * @ (dv/dt) _C min (A/ms)		(dv/dt)* @ 67% V _{DRM} min (V/μs)		Package
				I ++	II +-	III --	IV -+		max (V)	(A)					
8 Arms / T _{case} = 75°C T _j = 110°C I ² t = 40 A ² s											200 V/μs	10 V/μs			
TXDV 208 TXDV 408 TXDV 608 TXDV 808	200 400 600 800	80	2	100	100	100		100 max	1.8	11	7	28	500	TO 220 AB	
12 Arms / T _{case} = 75°C T _j = 110°C I ² t = 40 A ² s											200 V/μs	10 V/μs			
TXDV 212 TXDV 412 TXDV 612 TXDV 812	200 400 600 800	120	2	100	100	100		100 max	1.95	17	10	42.5	500	TO 220 AB	
25 Arms / T _{case} = 75°C T _j = 125°C I ² t = 265 A ² s											200 V/μs	10 V/μs			
TPDV 125 TPDV 225 TPDV 425 TPDV 625 TPDV 825 TPDV 1025 TPDV 1225	100 200 400 600 800 1000 1200	230	8	150	150	150		50	1.8	35	20	88	500 (1) 250 (2)	TOP 3	
25 Arms / T _{case} = 80°C T _j = 125°C I ² t = 265 A ² s											200 V/μs	10 V/μs			
TODV 125 TODV 225 TODV 425 TODV 625 TODV 825 TODV 1025 TODV 1225	100 200 400 600 800 1000 1200	230	8	150	150	150		50	1.8	35	20	88	500 (1) 250 (2)	RD 91	
40 Arms / T _{case} = 75°C T _j = 125°C I ² t = 610 A ² s											200 V/μs	10 V/μs			
TODV 140 TODV 240 TODV 440 TODV 640 TODV 840 TODV 1040 TODV 1240	100 200 400 600 800 1000 1200	350	8	200	200	200		50	1.8	60	35	142	500 (1) 250 (2)	RD 91	
40 Arms / T _{case} = 75°C T _j = 125°C I ² t = 610 A ² s											200 V/μs	10 V/μs			
TPDV 140 TPDV 240 TPDV 440 TPDV 640 TPDV 840 TPDV 1040 TPDV 1240	100 200 400 600 800 1000 1200	350	8	200	200	200		50	1.8	60	35	142	500 (1) 250 (2)	TOP 3	
60 Arms / T _{case} = 75°C T _j = 125°C I ² t = 1250 A ² s											200 V/μs	10 V/μs			
TGDV 601 TGDV 602 TGDV 604 TGDV 606 TGDV 608 TGDV 610 TGDV 612	100 200 400 600 800 1000 1200	500	5**	200	200	200		50	2	85	50	213	500 (1) 250 (2)	TO 65***	
* @ T _j max. (1) V _{DRM} ≤ 800 V. *** 1/4"-28 UNF. ** @ T _j = 100°C. (2) V _{DRM} ≥ 1000 V.															

MEDIUM POWER THYRISTORS & TRIACS < 100 A

TRIGGER DIODES (DIACS)

Type	Breakover voltage (V)			Breakover voltage symmetry ΔV max. (V)	Breakover current I_R max. (μA)	ΔV between 0 and 10 mA min. (V)	Package
	min	nom	max				
DB 3 DB 4	28 35	32 40	36 45	± 3 ± 3	100 100	5 5	DO 35
DC 34 DC 38 DC 42	30 35 39	34 38 42	38 42 45	± 3 ± 3 ± 3	50 50 50	5 5 5	DO 35
TMM DB 3	28	32	36	± 3	100	5	MINIMELF

Pages 158 through 165 have been removed from this edition.

CMOS - J-FET & BIPOLAR OP-AMPS

CMOS-SINGLE*

Type	Description	Temperature range (°C)	Package
TS271ACD	Programmable supply current - Low offset voltage	0 to 70	SO 8
TS271ACDT	Programmable supply current - Low offset voltage	0 to 70	SO 8 TAPE
TS271ACN	Programmable supply current - Low offset voltage	0 to 70	MINIDIP
TS271AID	Programmable supply current - Low offset voltage	-40 to 105	SO 8
TS271AIDT	Programmable supply current - Low offset voltage	-40 to 105	SO 8 TAPE
TS271AIN	Programmable supply current - Low offset voltage	-40 to 105	MINIDIP
TS271BCD	Programmable supply current - Very low offset voltage	0 to 70	SO 8
TS271BCDT	Programmable supply current - Very low offset voltage	0 to 70	SO 8 TAPE
TS271BCN	Programmable supply current - Very low offset voltage	0 to 70	MINIDIP
TS271BID	Programmable supply current - Very low offset voltage	-40 to 105	SO 8
TS271BIDT	Programmable supply current - Very low offset voltage	-40 to 105	SO 8 TAPE
TS271BIN	Programmable supply current - Very low offset voltage	-40 to 105	MINIDIP
TS271CD	Programmable supply current - Low cost	0 to 70	SO 8
TS271CDT	Programmable supply current - Low cost	0 to 70	SO 8 TAPE
TS271CN	Programmable supply current - Low cost	0 to 70	MINIDIP
TS271ID	Programmable supply current - Low cost	-40 to 105	SO 8
TS271IDT	Programmable supply current - Low cost	-40 to 105	SO 8 TAPE
TS271IN	Programmable supply current - Low cost	-40 to 105	MINIDIP

CMOS-DUAL*

Type	Description	Temperature range (°C)	Package
TS27L2ACD	Low supply current - Low offset voltage	0 to 70	SO 8
TS27L2ACDT	Low supply current - Low offset voltage	0 to 70	SO 8 TAPE
TS27L2ACN	Low supply current - Low offset voltage	0 to 70	MINIDIP
TS27L2AID	Low supply current - Low offset voltage	-40 to 105	SO 8
TS27L2AIDT	Low supply current - Low offset voltage	-40 to 105	SO 8 TAPE
TS27L2AIN	Low supply current - Low offset voltage	-40 to 105	MINIDIP
TS27L2BCD	Low supply current - Very low offset voltage	0 to 70	SO 8
TS27L2BCDT	Low supply current - Very low offset voltage	0 to 70	SO 8 TAPE
TS27L2BCN	Low supply current - Very low offset voltage	0 to 70	MINIDIP
TS27L2BID	Low supply current - Very low offset voltage	-40 to 105	SO 8
TS27L2BIDT	Low supply current - Very low offset voltage	-40 to 105	SO 8 TAPE
TS27L2BIN	Low supply current - Very low offset voltage	-40 to 105	MINIDIP
TS27L2CD	Low supply current - Low cost	0 to 70	SO 8
TS27L2CDT	Low supply current - Low cost	0 to 70	SO 8 TAPE
TS27L2CN	Low supply current - Low cost	0 to 70	MINIDIP
TS27L2ID	Low supply current - Low cost	-40 to 105	SO 8
TS27L2IDT	Low supply current - Low cost	-40 to 105	SO 8 TAPE
TS27L2IN	Low supply current - Low cost	-40 to 105	MINIDIP
TS27M2ACD	Medium supply current - Low offset voltage	0 to 70	SO 8
TS27M2ACDT	Medium supply current - Low offset voltage	0 to 70	SO 8 TAPE
TS27M2ACN	Medium supply current - Low offset voltage	0 to 70	MINIDIP
TS27M2AID	Medium supply current - Low offset voltage	-40 to 105	SO 8
TS27M2AIDT	Medium supply current - Low offset voltage	-40 to 105	SO 8 TAPE
TS27M2AIN	Medium supply current - Low offset voltage	-40 to 105	MINIDIP
TS27M2BCD	Medium supply current - Very low offset voltage	0 to 70	SO 8
TS27M2BCDT	Medium supply current - Very low offset voltage	0 to 70	SO 8 TAPE
TS27M2BCN	Medium supply current - Very low offset voltage	0 to 70	MINIDIP
TS27M2BID	Medium supply current - Very low offset voltage	-40 to 105	SO 8
TS27M2BIDT	Medium supply current - Very low offset voltage	-40 to 105	SO 8 TAPE
TS27M2BIN	Medium supply current - Very low offset voltage	-40 to 105	MINIDIP
TS27M2CD	Medium supply current - Low cost	0 to 70	SO 8
TS27M2CDT	Medium supply current - Low cost	0 to 70	SO 8 TAPE
TS27M2CN	Medium supply current - Low cost	0 to 70	MINIDIP
TS27M2ID	Medium supply current - Low cost	-40 to 105	SO 8
TS27M2IDT	Medium supply current - Low cost	-40 to 105	SO 8 TAPE
TS27M2IN	Medium supply current - Low cost	-40 to 105	MINIDIP

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CMOS - J-FET & BIPOLAR OP-AMPS

CMOS-DUAL * (Continued)

Type	Description	Temperature range (°C)	Package
TS272ACD	High speed - Low offset voltage	0 to 70	SO 8
TS272ACDT	High speed - Low offset voltage	0 to 70	SO 8 TAPE
TS272ACN	High speed - Low offset voltage	0 to 70	MINIDIP
TS272AID	High speed - Low offset voltage	-40 to 105	SO 8
TS272AIDT	High speed - Low offset voltage	-40 to 105	SO 8 TAPE
TS272AIN	High speed - Low offset voltage	-40 to 105	MINIDIP
TS272BCD	High speed - Very low offset voltage	0 to 70	SO 8
TS272BCDT	High speed - Very low offset voltage	0 to 70	SO 8 TAPE
TS272BCN	High speed - Very low offset voltage	0 to 70	MINIDIP
TS272BID	High speed - Very low offset voltage	-40 to 105	SO 8
TS272BIDT	High speed - Very low offset voltage	-40 to 105	SO 8 TAPE
TS272BIN	High speed - Very low offset voltage	-40 to 105	MINIDIP
TS272CD	High speed - Low cost	0 to 70	SO 8
TS272CDT	High speed - Low cost	0 to 70	SO 8 TAPE
TS272CN	High speed - Low cost	0 to 70	MINIDIP
TS272ID	High speed - Low cost	-40 to 105	SO 8
TS272IDT	High speed - Low cost	-40 to 105	SO 8 TAPE
TS272IN	High speed - Low cost	-40 to 105	MINIDIP

CMOS-QUAD *

Type	Description	Temperature range (°C)	Package
TS27L4ACD	Low supply current - Low offset voltage	0 to 70	SO 14
TS27L4ACDT	Low supply current - Low offset voltage	0 to 70	SO 14 TAPE
TS27L4ACN	Low supply current - Low offset voltage	0 to 70	DIP 14
TS27L4AID	Low supply current - Low offset voltage	-40 to 105	SO 14
TS27L4AIDT	Low supply current - Low offset voltage	-40 to 105	SO 14 TAPE
TS27L4AIN	Low supply current - Low offset voltage	-40 to 105	DIP 14
TS27L4BCD	Low supply current - Very low offset voltage	0 to 70	SO 14
TS27L4BCDT	Low supply current - Very low offset voltage	0 to 70	SO 14 TAPE
TS27L4BCN	Low supply current - Very low offset voltage	0 to 70	DIP 14
TS27L4BID	Low supply current - Very low offset voltage	-40 to 105	SO 14
TS27L4BIDT	Low supply current - Very low offset voltage	-40 to 105	SO 14 TAPE
TS27L4BIN	Low supply current - Very low offset voltage	-40 to 105	DIP 14
TS27L4CD	Low supply current - Low cost	0 to 70	SO 14
TS27L4CDT	Low supply current - Low cost	0 to 70	SO 14 TAPE
TS27L4CN	Low supply current - Low cost	0 to 70	DIP 14
TS27L4ID	Low supply current - Low cost	-40 to 105	SO 14
TS27L4IDT	Low supply current - Low cost	-40 to 105	SO 14 TAPE
TS27L4IN	Low supply current - Low cost	-40 to 105	DIP 14
TS27M4ACD	Medium supply current - Low offset voltage	0 to 70	SO 14
TS27M4ACDT	Medium supply current - Low offset voltage	0 to 70	SO 14 TAPE
TS27M4ACN	Medium supply current - Low offset voltage	0 to 70	DIP 14
TS27M4AID	Medium supply current - Low offset voltage	-40 to 105	SO 14
TS27M4AIDT	Medium supply current - Low offset voltage	-40 to 105	SO 14 TAPE
TS27M4AIN	Medium supply current - Low offset voltage	-40 to 105	DIP 14
TS27M4BCD	Medium supply current - Very low offset voltage	0 to 70	SO 14
TS27M4BCDT	Medium supply current - Very low offset voltage	0 to 70	SO 14 TAPE
TS27M4BCN	Medium supply current - Very low offset voltage	0 to 70	DIP 14
TS27M4BID	Medium supply current - Very low offset voltage	-40 to 105	SO 14
TS27M4BIDT	Medium supply current - Very low offset voltage	-40 to 105	SO 14 TAPE
TS27M4BIN	Medium supply current - Very low offset voltage	-40 to 105	DIP 14
TS27M4CD	Medium supply current - Low cost	0 to 70	SO 14
TS27M4CDT	Medium supply current - Low cost	0 to 70	SO 14 TAPE
TS27M4CN	Medium supply current - Low cost	0 to 70	DIP 14
TS27M4ID	Medium supply current - Low cost	-40 to 105	SO 14
TS27M4IDT	Medium supply current - Low cost	-40 to 105	SO 14 TAPE
TS27M4IN	Medium supply current - Low cost	-40 to 105	DIP 14

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CMOS - J-FET & BIPOLAR OP-AMPS

CMOS-QUAD* (Continued)

Type	Description	Temperature range (°C)	Package
TS274ACD	High speed - Low offset voltage	0 to 70	SO 14
TS274ACDT	High speed - Low offset voltage	0 to 70	SO 14 TAPE
TS274ACN	High speed - Low offset voltage	0 to 70	DIP 14
TS274AID	High speed - Low offset voltage	-40 to 105	SO 14
TS274AIDT	High speed - Low offset voltage	-40 to 105	SO 14 TAPE
TS274AIN	High speed - Low offset voltage	-40 to 105	DIP 14
TS274BCD	High speed - Very low offset voltage	0 to 70	SO 14
TS274BCDT	High speed - Very low offset voltage	0 to 70	SO 14 TAPE
TS274BCN	High speed - Very low offset voltage	0 to 70	DIP 14
TS274BID	High speed - Very low offset voltage	-40 to 105	SO 14
TS274BIDT	High speed - Very low offset voltage	-40 to 105	SO 14 TAPE
TS274BIN	High speed - Very low offset voltage	-40 to 105	DIP 14
TS274CD	High speed - Low cost	0 to 70	SO 14
TS274CDT	High speed - Low cost	0 to 70	SO 14 TAPE
TS274CN	High speed - Low cost	0 to 70	DIP 14
TS274ID	High speed - Low cost	-40 to 105	SO 14
TS274IDT	High speed - Low cost	-40 to 105	SO 14 TAPE
TS274IN	High speed - Low cost	-40 to 105	DIP 14

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J-FET-SINGLE

Type	Description	Temperature range (°C)	Package
LF251D	Wide bandwidth	-40 to 105	SO 8
LF251DT	Wide bandwidth	-40 to 105	SO 8 TAPE
LF251N	Wide bandwidth	-40 to 105	MINIDIP
LF255D	High performance - Low supply current	-40 to 105	SO 8
LF255DT	High performance - Low supply current	-40 to 105	SO 8 TAPE
LF255N	High performance - Low supply current	-40 to 105	MINIDIP
LF256D	High performance - Wide band	-40 to 105	SO 8
LF256DT	High performance - Wide band	-40 to 105	SO 8 TAPE
LF256N	High performance - Wide band	-40 to 105	MINIDIP
LF257D	High performance - Wide band decompensated	-40 to 105	SO 8
LF257DT	High performance - Wide band decompensated	-40 to 105	SO 8 TAPE
LF257N	High performance - Wide band decompensated	-40 to 105	MINIDIP
LF351D	Wide bandwidth	0 to 70	SO 8
LF351DT	Wide bandwidth	0 to 70	SO 8 TAPE
LF351N	Wide bandwidth	0 to 70	MINIDIP
LF355D	High performance - Low supply current	0 to 70	SO 8
LF355DT	High performance - Low supply current	0 to 70	SO 8 TAPE
LF355N	High performance - Low supply current	0 to 70	MINIDIP
LF356D	High performance - Wide band	0 to 70	SO 8
LF356DT	High performance - Wide band	0 to 70	SO 8 TAPE
LF356N	High performance - Wide band	0 to 70	MINIDIP
LF357D	High performance - Wide band decompensated	0 to 70	SO 8
LF357DT	High performance - Wide band decompensated	0 to 70	SO 8 TAPE
LF357N	High performance - Wide band decompensated	0 to 70	MINIDIP
MC33001AD	General purpose - Very low input offset voltage	-40 to 105	SO 8
MC33001ADT	General purpose - Very low input offset voltage	-40 to 105	SO 8 TAPE
MC33001AN	General purpose - Very low input offset voltage	-40 to 105	MINIDIP
MC33001BD	General purpose - Low input offset voltage	-40 to 105	SO 8
MC33001BDT	General purpose - Low input offset voltage	-40 to 105	SO 8 TAPE
MC33001BN	General purpose - Low input offset voltage	-40 to 105	MINIDIP
MC33001D	General purpose	-40 to 105	SO 8
MC33001DT	General purpose	-40 to 105	SO 8 TAPE
MC33001N	General purpose	-40 to 105	MINIDIP
MC34001AD	General purpose - Very low input offset voltage	0 to 70	SO 8
MC34001ADT	General purpose - Very low input offset voltage	0 to 70	SO 8 TAPE
MC34001AN	General purpose - Very low input offset voltage	0 to 70	MINIDIP

CMOS - J-FET & BIPOLAR OP-AMPs

J-FET-SINGLE (Continued)

Type	Description	Temperature range (°C)	Package
MC34001BD	General purpose - Low input offset voltage	0 to 70	SO 8
MC34001BDT	General purpose - Low input offset voltage	0 to 70	SO 8 TAPE
MC34001BN	General purpose - Low input offset voltage	0 to 70	MINIDIP
MC34001D	General purpose	0 to 70	SO 8
MC34001DT	General purpose	0 to 70	SO 8 TAPE
MC34001N	General purpose	0 to 70	MINIDIP
TL061ACD	Low power - Low input offset voltage	0 to 70	SO 8
TL061ACDT	Low power - Low input offset voltage	0 to 70	SO 8 TAPE
TL061ACN	Low power - Low input offset voltage	0 to 70	MINIDIP
TL061AID	Low power - Low input offset voltage	-40 to 105	SO 8
TL061AIDT	Low power - Low input offset voltage	-40 to 105	SO 8 TAPE
TL061AIN	Low power - Low input offset voltage	-40 to 105	MINIDIP
TL061BCD	Low power - Very low input offset voltage	0 to 70	SO 8
TL061BCDT	Low power - Very low input offset voltage	0 to 70	SO 8 TAPE
TL061BCN	Low power - Very low input offset voltage	0 to 70	MINIDIP
TL061BID	Low power - Very low input offset voltage	-40 to 105	SO 8
TL061BIDT	Low power - Very low input offset voltage	-40 to 105	SO 8 TAPE
TL061BIN	Low power - Very low input offset voltage	-40 to 105	MINIDIP
TL061CD	Low power	0 to 70	SO 8
TL061CDT	Low power	0 to 70	SO 8 TAPE
TL061CN	Low power	0 to 70	MINIDIP
TL061ID	Low power	-40 to 105	SO 8
TL061IDT	Low power	-40 to 105	SO 8 TAPE
TL061IN	Low power	-40 to 105	MINIDIP
TL071ACD	Low noise - Low input offset voltage	0 to 70	SO 8
TL071ACDT	Low noise - Low input offset voltage	0 to 70	SO 8 TAPE
TL071ACN	Low noise - Low input offset voltage	0 to 70	MINIDIP
TL071AID	Low noise - Low input offset voltage	-40 to 105	SO 8
TL071AIDT	Low noise - Low input offset voltage	-40 to 105	SO 8 TAPE
TL071AIN	Low noise - Low input offset voltage	-40 to 105	MINIDIP
TL071BCD	Low noise - Very low input offset voltage	0 to 70	SO 8
TL071BCDT	Low noise - Very low input offset voltage	0 to 70	SO 8 TAPE
TL071BCN	Low noise - Very low input offset voltage	0 to 70	MINIDIP
TL071BID	Low noise - Very low input offset voltage	-40 to 105	SO 8
TL071BIDT	Low noise - Very low input offset voltage	-40 to 105	SO 8 TAPE
TL071BIN	Low noise - Very low input offset voltage	-40 to 105	MINIDIP
TL071CD	Low noise	0 to 70	SO 8
TL071CDT	Low noise	0 to 70	SO 8 TAPE
TL071CN	Low noise	0 to 70	MINIDIP
TL071ID	Low noise	-40 to 105	SO 8
TL071IDT	Low noise	-40 to 105	SO 8 TAPE
TL071IN	Low noise	-40 to 105	MINIDIP
TL081ACD	General purpose - Low input offset voltage	0 to 70	SO 8
TL081ACDT	General purpose - Low input offset voltage	0 to 70	SO 8 TAPE
TL081ACN	General purpose - Low input offset voltage	0 to 70	MINIDIP
TL081AID	General purpose - Low input offset voltage	-40 to 105	SO 8
TL081AIDT	General purpose - Low input offset voltage	-40 to 105	SO 8 TAPE
TL081AIN	General purpose - Low input offset voltage	-40 to 105	MINIDIP
TL081BCD	General purpose - Very low input offset voltage	0 to 70	SO 8
TL081BCDT	General purpose - Very low input offset voltage	0 to 70	SO 8 TAPE
TL081BCN	General purpose - Very low input offset voltage	0 to 70	MINIDIP
TL081BID	General purpose - Very low input offset voltage	-40 to 105	SO 8
TL081BIDT	General purpose - Very low input offset voltage	-40 to 105	SO 8 TAPE
TL081BIN	General purpose - Very low input offset voltage	-40 to 105	MINIDIP
TL081CD	General purpose	0 to 70	SO 8
TL081CDT	General purpose	0 to 70	SO 8 TAPE
TL081CN	General purpose	0 to 70	MINIDIP
TL081ID	General purpose	-40 to 105	SO 8
TL081IDT	General purpose	-40 to 105	SO 8 TAPE
TL081IN	General purpose	-40 to 105	MINIDIP

CMOS - J-FET & BIPOLAR OP-AMPS

J-FET-DUAL

Type	Description	Temperature range (°C)	Package
LF253D	Wide bandwidth	-40 to 105	SO 8
LF253DT	Wide bandwidth	-40 to 105	SO 8 TAPE
LF253N	Wide bandwidth	-40 to 105	MINIDIP
LF353D	Wide bandwidth	0 to 70	SO 8
LF353DT	Wide bandwidth	0 to 70	SO 8 TAPE
LF353N	Wide bandwidth	0 to 70	MINIDIP
MC33002AD	General purpose - Very low input offset voltage	-40 to 105	SO 8
MC33002ADT	General purpose - Very low input offset voltage	-40 to 105	SO 8 TAPE
MC33002AN	General purpose - Very low input offset voltage	-40 to 105	MINIDIP
MC33002BD	General purpose - Low input offset voltage	-40 to 105	SO 8
MC33002BDT	General purpose - Low input offset voltage	-40 to 105	SO 8 TAPE
MC33002BN	General purpose - Low input offset voltage	-40 to 105	MINIDIP
MC33002D	General purpose	-40 to 105	SO 8
MC33002DT	General purpose	-40 to 105	SO 8 TAPE
MC33002N	General purpose	-40 to 105	MINIDIP
MC34002AD	General purpose - Very low input offset voltage	0 to 70	SO 8
MC34002ADT	General purpose - Very low input offset voltage	0 to 70	SO 8 TAPE
MC34002AN	General purpose - Very low input offset voltage	0 to 70	MINIDIP
MC34002BD	General purpose - Low input offset voltage	0 to 70	SO 8
MC34002BDT	General purpose - Low input offset voltage	0 to 70	SO 8 TAPE
MC34002BN	General purpose - Low input offset voltage	0 to 70	MINIDIP
MC34002D	General purpose	0 to 70	SO 8
MC34002DT	General purpose	0 to 70	SO 8 TAPE
MC34002N	General purpose	0 to 70	MINIDIP
TL062ACD	Low power - Low input offset voltage	0 to 70	SO 8
TL062ACDT	Low power - Low input offset voltage	0 to 70	SO 8 TAPE
TL062ACN	Low power - Low input offset voltage	0 to 70	MINIDIP
TL062AID	Low power - Low input offset voltage	-40 to 105	SO 8
TL062AIDT	Low power - Low input offset voltage	-40 to 105	SO 8 TAPE
TL062AIN	Low power - Low input offset voltage	-40 to 105	MINIDIP
TL062BCD	Low power - Very low input offset voltage	0 to 70	SO 8
TL062BCDT	Low power - Very low input offset voltage	0 to 70	SO 8 TAPE
TL062BCN	Low power - Very low input offset voltage	0 to 70	MINIDIP
TL062BID	Low power - Very low input offset voltage	-40 to 105	SO 8
TL062BIDT	Low power - Very low input offset voltage	-40 to 105	SO 8 TAPE
TL062BIN	Low power - Very low input offset voltage	-40 to 105	MINIDIP
TL062CD	Low power	0 to 70	SO 8
TL062CDT	Low power	0 to 70	SO 8 TAPE
TL062CN	Low power	0 to 70	MINIDIP
TL062ID	Low power	-40 to 105	SO 8
TL062IDT	Low power	-40 to 105	SO 8 TAPE
TL062IN	Low power	-40 to 105	MINIDIP
TL072ACD	Low noise - Low input offset voltage	0 to 70	SO 8
TL072ACDT	Low noise - Low input offset voltage	0 to 70	SO 8 TAPE
TL072ACN	Low noise - Low input offset voltage	0 to 70	MINIDIP
TL072AID	Low noise - Low input offset voltage	-40 to 105	SO 8
TL072AIDT	Low noise - Low input offset voltage	-40 to 105	SO 8 TAPE
TL072AIN	Low noise - Low input offset voltage	-40 to 105	MINIDIP
TL072BCD	Low noise - Very low input offset voltage	0 to 70	SO 8
TL072BCDT	Low noise - Very low input offset voltage	0 to 70	SO 8 TAPE
TL072BCN	Low noise - Very low input offset voltage	0 to 70	MINIDIP
TL072BID	Low noise - Very low input offset voltage	-40 to 105	SO 8
TL072BIDT	Low noise - Very low input offset voltage	-40 to 105	SO 8 TAPE
TL072BIN	Low noise - Very low input offset voltage	-40 to 105	MINIDIP
TL072CD	Low noise	0 to 70	SO 8
TL072CDT	Low noise	0 to 70	SO 8 TAPE
TL072CN	Low noise	0 to 70	MINIDIP
TL072ID	Low noise	-40 to 105	SO 8
TL072IDT	Low noise	-40 to 105	SO 8 TAPE
TL072IN	Low noise	-40 to 105	MINIDIP
TL082ACD	General purpose - Low input offset voltage	0 to 70	SO 8
TL082ACDT	General purpose - Low input offset voltage	0 to 70	SO 8 TAPE
TL082ACN	General purpose - Low input offset voltage	0 to 70	MINIDIP
TL082AID	General purpose - Low input offset voltage	-40 to 105	SO 8
TL082AIDT	General purpose - Low input offset voltage	-40 to 105	SO 8 TAPE
TL082AIN	General purpose - Low input offset voltage	-40 to 105	MINIDIP

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J-FET-DUAL (Continued)

Type	Description	Temperature range (°C)	Package
TL082BCD	General purpose - Very low input offset voltage	0 to 70	SO 8
TL082BCDT	General purpose - Very low input offset voltage	0 to 70	SO 8 TAPE
TL082BCN	General purpose - Very low input offset voltage	0 to 70	MINIDIP
TL082BID	General purpose - Very low input offset voltage	-40 to 105	SO 8
TL082BIDT	General purpose - Very low input offset voltage	-40 to 105	SO 8 TAPE
TL082BIN	General purpose - Very low input offset voltage	-40 to 105	MINIDIP
TL082CD	General purpose	0 to 70	SO 8
TL082CDT	General purpose	0 to 70	SO 8 TAPE
TL082CN	General purpose	0 to 70	MINIDIP
TL082ID	General purpose	-40 to 105	SO 8
TL082IDT	General purpose	-40 to 105	SO 8 TAPE
TL082IN	General purpose	-40 to 105	MINIDIP

J-FET-QUAD

Type	Description	Temperature range (°C)	Package
MC33004AD	General purpose - Very low input offset voltage	-40 to 105	SO 14
MC33004ADT	General purpose - Very low input offset voltage	-40 to 105	SO 14 TAPE
MC33004AN	General purpose - Very low input offset voltage	-40 to 105	DIP 14
MC33004BD	General purpose - Low input offset voltage	-40 to 105	SO 14
MC33004BDT	General purpose - Low input offset voltage	-40 to 105	SO 14 TAPE
MC33004BN	General purpose - Low input offset voltage	-40 to 105	DIP 14
MC33004D	General purpose	-40 to 105	SO 14
MC33004DT	General purpose	-40 to 105	SO 14 TAPE
MC33004N	General purpose	-40 to 105	DIP 14
MC34004AD	General purpose - Very low input offset voltage	0 to 70	SO 14
MC34004ADT	General purpose - Very low input offset voltage	0 to 70	SO 14 TAPE
MC34004AN	General purpose - Very low input offset voltage	0 to 70	DIP 14
MC34004BD	General purpose - Low input offset voltage	0 to 70	SO 14
MC34004BDT	General purpose - Low input offset voltage	0 to 70	SO 14 TAPE
MC34004BN	General purpose - Low input offset voltage	0 to 70	DIP 14
MC34004D	General purpose	0 to 70	SO 14
MC34004DT	General purpose	0 to 70	SO 14 TAPE
MC34004N	General purpose	0 to 70	DIP 14
TL064ACD	Low power - Low input offset voltage	0 to 70	SO 14
TL064ACDT	Low power - Low input offset voltage	0 to 70	SO 14 TAPE
TL064ACN	Low power - Low input offset voltage	0 to 70	DIP 14
TL064AID	Low power - Low input offset voltage	-40 to 105	SO 14
TL064AIDT	Low power - Low input offset voltage	-40 to 105	SO 14 TAPE
TL064AIN	Low power - Low input offset voltage	-40 to 105	DIP 14
TL064BCD	Low power - Very low input offset voltage	0 to 70	SO 14
TL064BCDT	Low power - Very low input offset voltage	0 to 70	SO 14 TAPE
TL064BCN	Low power - Very low input offset voltage	0 to 70	DIP 14
TL064BID	Low power - Very low input offset voltage	-40 to 105	SO 14
TL064BIDT	Low power - Very low input offset voltage	-40 to 105	SO 14 TAPE
TL064BIN	Low power - Very low input offset voltage	-40 to 105	DIP 14
TL064CD	Low power	0 to 70	SO 14
TL064CDT	Low power	0 to 70	SO 14 TAPE
TL064CJ	Low power	0 to 70	CERDIP 14
TL064CN	Low power	0 to 70	DIP 14
TL064ID	Low power	-40 to 105	SO 14
TL064IDT	Low power	-40 to 105	SO 14 TAPE
TL064IJ	Low power	-40 to 105	CERDIP 14
TL064IN	Low power	-40 to 105	DIP 14
TL074ACD	Low noise - Low input offset voltage	0 to 70	SO 14
TL074ACDT	Low noise - Low input offset voltage	0 to 70	SO 14 TAPE
TL074ACN	Low noise - Low input offset voltage	0 to 70	DIP 14
TL074AID	Low noise - Low input offset voltage	-40 to 105	SO 14

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J-FET-QUAD (Continued)

Type	Description	Temperature range (°C)	Package
TL074AIDT	Low noise - Low input offset voltage	-40 to 105	SO 14 TAPE
TL074AIN	Low noise - Low input offset voltage	-40 to 105	DIP 14
TL074BCD	Low noise - Very low input offset voltage	0 to 70	SO 14
TL074BCDT	Low noise - Very low input offset voltage	0 to 70	SO 14 TAPE
TL074BCN	Low noise - Very low input offset voltage	0 to 70	DIP 14
TL074BID	Low noise - Very low input offset voltage	-40 to 105	SO 14
TL074BIDT	Low noise - Very low input offset voltage	-40 to 105	SO 14 TAPE
TL074BIN	Low noise - Very low input offset voltage	-40 to 105	DIP 14
TL074CD	Low noise	0 to 70	SO 14
TL074CDT	Low noise	0 to 70	SO 14 TAPE
TL074CJ	Low noise	0 to 70	CERDIP 14
TL074CN	Low noise	0 to 70	DIP 14
TL074ID	Low noise	-40 to 105	SO 14
TL074IDT	Low noise	-40 to 105	SO 14 TAPE
TL074IN	Low noise	-40 to 105	DIP 14
TL084ACD	General purpose - Low input offset voltage	0 to 70	SO 14
TL084ACDT	General purpose - Low input offset voltage	0 to 70	SO 14 TAPE
TL084ACJ	General purpose - Low input offset voltage	0 to 70	CERDIP 14
TL084ACN	General purpose - Low input offset voltage	0 to 70	DIP 14
TL084AID	General purpose - Low input offset voltage	-40 to 105	SO 14
TL084AIDT	General purpose - Low input offset voltage	-40 to 105	SO 14 TAPE
TL084AIN	General purpose - Low input offset voltage	-40 to 105	DIP 14
TL084BCD	General purpose - Very low input offset voltage	0 to 70	SO 14
TL084BCDT	General purpose - Very low input offset voltage	0 to 70	SO 14 TAPE
TL084BCJ	General purpose - Very low input offset voltage	0 to 70	CERDIP 14
TL084BCN	General purpose - Very low input offset voltage	0 to 70	DIP 14
TL084BID	General purpose - Very low input offset voltage	-40 to 105	SO 14
TL084BIDT	General purpose - Very low input offset voltage	-40 to 105	SO 14 TAPE
TL084BIN	General purpose - Very low input offset voltage	-40 to 105	DIP 14
TL084CD	General purpose	0 to 70	SO 14
TL084CDT	General purpose	0 to 70	SO 14 TAPE
TL084CJ	General purpose	0 to 70	CERDIP 14
TL084CN	General purpose	0 to 70	DIP 14
TL084ID	General purpose	-40 to 105	SO 14
TL084IDT	General purpose	-40 to 105	SO 14 TAPE
TL084IJ	General purpose	-40 to 105	CERDIP 14
TL084IN	General purpose	-40 to 105	DIP 14

BIPOLAR-SINGLE

Type	Description	Temperature range (°C)	Package
LM101AD	Low offset - External frequency compensation	-55 to 125	SO 8
LM101ADT	Low offset - External frequency compensation	-55 to 125	SO 8 TAPE
LM201AD	Low offset - External frequency compensation	-40 to 105	SO 8
LM201ADT	Low offset - External frequency compensation	-40 to 105	SO 8 TAPE
LM201AJ	Low offset - External frequency compensation	-40 to 105	MINICERDIP
LM201AN	Low offset - External frequency compensation	-40 to 105	MINIDIP
LM208AD	Precision - Low input current - Very low input offset voltage	-40 to 105	SO 8
LM208ADT	Precision - Low input current - Very low input offset voltage	-40 to 105	SO 8 TAPE
LM208AN	Precision - Low input current - Very low input offset voltage	-40 to 105	MINIDIP
LM208D	Precision - Low input current	-40 to 105	SO 8
LM208DT	Precision - Low input current	-40 to 105	SO 8 TAPE
LM208N	Precision - Low input current	-40 to 105	MINIDIP
LM218D	High speed - wide bandwidth - high slew rate	-40 to 105	SO 8
LM218DT	High speed - wide bandwidth - high slew rate	-40 to 105	SO 8 TAPE
LM218N	High speed - wide bandwidth - high slew rate	-40 to 105	MINIDIP
LM301AD	Low offset - External frequency compensation	0 to 70	SO 8

CMOS - J-FET & BIPOLAR OP-AMPS

BIPOLAR-SINGLE (Continued)

Type	Description	Temperature range (°C)	Package
LM301ADT	Low offset - External frequency compensation	0 to 70	SO 8 TAPE
LM301AJ	Low offset - External frequency compensation	0 to 70	MINICERDIP
LM301AN	Low offset - External frequency compensation	0 to 70	MINIDIP
LM308AD	Precision - Low input current - Very low input offset voltage	0 to 70	SO 8
LM308ADT	Precision - Low input current - Very low input offset voltage	0 to 70	SO 8 TAPE
LM308AJ	Precision - Low input current - Very low input offset voltage	0 to 70	MINICERDIP
LM308AN	Precision - Low input current - Very low input offset voltage	0 to 70	MINIDIP
LM308D	Precision - Low input current	0 to 70	SO 8
LM308DT	Precision - Low input current	0 to 70	SO 8 TAPE
LM308J	Precision - Low input current	0 to 70	MINICERDIP
LM308N	Precision - Low input current	0 to 70	MINIDIP
LM318D	High speed - Wide bandwidth - High slew rate	0 to 70	SO 8
LM318DT	High speed - Wide bandwidth - High slew rate	0 to 70	SO 8 TAPE
LM318N	High speed - Wide bandwidth - High slew rate	0 to 70	MINIDIP
TDB7910N	Power - 500 mA output stage	0 to 70	DIP 16
UA741AH	General purpose - Internal frequency compensation	-55 to 125	METAL CAN
UA741CD	General purpose - Internal frequency compensation	0 to 70	SO 8
UA741CDT	General purpose - Internal frequency compensation	0 to 70	SO 8 TAPE
UA741CH	General purpose - Internal frequency compensation	0 to 70	METAL CAN
UA741CJ	General purpose - Internal frequency compensation	0 to 70	MINICERDIP
UA741CN	General purpose - Internal frequency compensation	0 to 70	MINIDIP
UA741CN14	General purpose - Internal frequency compensation	0 to 70	DIP 14
UA741EN	General purpose - Internal frequency compensation	0 to 70	MINIDIP
UA741ID	General purpose - Internal frequency compensation	-40 to 105	SO 8
UA741IDT	General purpose - Internal frequency compensation	-40 to 105	SO 8 TAPE
UA741IJ	General purpose - Internal frequency compensation	-40 to 105	MINICERDIP
UA741IN	General purpose - Internal frequency compensation	-40 to 105	MINIDIP
UA741IN14	General purpose - Internal frequency compensation	-40 to 105	DIP 14
UA741MH	General purpose - Internal frequency compensation	-55 to 125	METAL CAN
UA741MJ	General purpose - Internal frequency compensation	-55 to 125	MINICERDIP
UA741MN	General purpose - Internal frequency compensation	-55 to 125	MINIDIP
UA741MN14	General purpose - Internal frequency compensation	-55 to 125	DIP 14
UA748AH	Precision - Low offset	-55 to 125	METAL CAN
UA748CD	Precision - Low offset	0 to 70	SO 8
UA748CDT	Precision - Low offset	0 to 70	SO 8 TAPE
UA748CH	Precision - Low offset	0 to 70	METAL CAN
UA748CJ	Precision - Low offset	0 to 70	MINICERDIP
UA748CN	Precision - Low offset	0 to 70	MINIDIP
UA748ID	Precision - Low offset	-40 to 105	SO 8
UA748IDT	Precision - Low offset	-40 to 105	SO 8 TAPE
UA748IN	Precision - Low offset	-40 to 105	MINIDIP
UA748MH	Precision - Low offset	-55 to 125	METAL CAN
UA748MJ	Precision - Low offset	-55 to 125	MINICERDIP
UA776CD	Programmable - High input impedance	0 to 70	SO 8
UA776CDT	Programmable - High input impedance	0 to 70	SO 8 TAPE
UA776CH	Programmable - High input impedance	0 to 70	METAL CAN
UA776CJ	Programmable - High input impedance	0 to 70	MINICERDIP
UA776CN	Programmable - High input impedance	0 to 70	MINIDIP
UA776ID	Programmable - High input impedance	-40 to 105	SO 8
UA776IDT	Programmable - High input impedance	-40 to 105	SO 8 TAPE
UA776IN	Programmable - High input impedance	-40 to 105	MINIDIP
UA776MH	Programmable - High input impedance	-55 to 125	METAL CAN
UA776MJ	Programmable - High input impedance	-55 to 125	MINICERDIP

CMOS - J-FET & BIPOLAR OP-AMPS

BIPOLAR-DUAL

Type	Description	Temperature range (°C)	Package
LM158AJ	Low power - Single power supply - Low input offset voltage	-55 to 125	MINICERDIP
LM158J	Low power - Single power supply	-55 to 125	MINICERDIP
LM258AJ	Low power - Single power supply - Low input offset voltage	-40 to 105	MINICERDIP
LM258D	Low power - Single power supply	-40 to 105	SO 8
LM258DT	Low power - Single power supply	-40 to 105	SO 8 TAPE
LM258J	Low power - Single power supply - Automotive	-40 to 105	MINICERDIP
LM258N	Low power - Single power supply	-40 to 105	MINIDIP
LM2904D	Low power - Single power supply - Automotive	-40 to 105	SO 8
LM2904DT	Low power - Single power supply - Automotive	-40 to 105	SO 8 TAPE
LM2904J	Low power - Single power supply - Automotive	-40 to 105	MINICERDIP
LM2904N	Low power - Single power supply - Automotive	-40 to 105	MINIDIP
LM358AD	Low power - Single power supply - Low input offset voltage	0 to 70	SO 8
LM358ADT	Low power - Single power supply - Low input offset voltage	0 to 70	SO 8 TAPE
LM358AJ	Low power - Single power supply - Low input offset voltage	0 to 70	MINICERDIP
LM358AN	Low power - Single power supply - Low input offset voltage	0 to 70	MINIDIP
LM358D	Low power - Single power supply	0 to 70	SO 8
LM358DT	Low power - Single power supply	0 to 70	SO 8 TAPE
LM358J	Low power - Single power supply	0 to 70	MINICERDIP
LM358N	Low power - Single power supply	0 to 70	MINIDIP
MC1458D	General purpose - Internal frequency compensation	0 to 70	SO 8
MC1458DT	General purpose - Internal frequency compensation	0 to 70	SO 8 TAPE
MC1458ID	General purpose - Internal frequency compensation	-40 to 105	SO 8
MC1458IDT	General purpose - Internal frequency compensation	-40 to 105	SO 8 TAPE
MC1458IN	General purpose - Internal frequency compensation	-40 to 105	MINIDIP
MC1458J	General purpose - Internal frequency compensation	0 to 70	MINICERDIP
MC1458N	General purpose - Internal frequency compensation	0 to 70	MINIDIP
MC1558J	General purpose - Internal frequency compensation	-55 to 125	MINICERDIP
MC1558N	General purpose - Internal frequency compensation	-55 to 125	MINIDIP
MC4558CD	Wideband - Low power	0 to 70	SO 8
MC4558CDT	Wideband - Low power	0 to 70	SO 8 TAPE
MC4558CJ	Wideband - Low power	0 to 70	MINICERDIP
MC4558CN	Wideband - Low power	0 to 70	MINIDIP
MC4558ID	Wideband - Low power	-40 to 105	SO 8
MC4558IDT	Wideband - Low power	-40 to 105	SO 8 TAPE
MC4558IN	Wideband - Low power	-40 to 105	MINIDIP
TEB1033D	Low distortion & noise - High channel separation	0 to 70	SO 8
TEB1033DT	Low distortion & noise - High channel separation	0 to 70	SO 8 TAPE
TEB1033N	Low distortion & noise - High channel separation	0 to 70	MINIDIP
TEF1033D	Low distortion & noise - High channel separation	-40 to 105	SO 8
TEF1033DT	Low distortion & noise - High channel separation	-40 to 105	SO 8 TAPE
TEF1033N	Low distortion & noise - High channel separation	-40 to 105	MINIDIP

BIPOLAR-QUAD

Type	Description	Temperature range (°C)	Package
LM124AJ	General purpose - Single power supply - Low input offset voltage	-55 to 125	CERDIP 14
LM124D	General purpose - Single power supply	-55 to 125	SO 14
LM124DT	General purpose - Single power supply	-55 to 125	SO 14 TAPE
LM124J	General purpose - Single power supply	-55 to 125	CERDIP 14
LM124N	General purpose - Single power supply	-55 to 125	DIP 14
LM148D	Quad 741 - Low supply current drain	-55 to 125	SO 14
LM148DT	Quad 741 - Low supply current drain	-55 to 125	SO 14 TAPE
LM148N	Quad 741 - Low supply current drain	-55 to 125	DIP 14
LM224AD	General purpose - Single power supply - Low input offset voltage	-40 to 105	SO 14
LM224ADT	General purpose - Single power supply - Low input offset voltage	-40 to 105	SO 14 TAPE
LM224AJ	General purpose - Single power supply - Low input offset voltage	-40 to 105	CERDIP 14
LM224AN	General purpose - Single power supply - Low input offset voltage	-40 to 105	DIP 14
LM224D	General purpose - Single power supply	-40 to 105	SO 14

CMOS - J-FET & BIPOLAR OP-AMPS

BIPOLAR-QUAD (Continued)

Type	Description	Temperature range (°C)	Package
LM224DT	General purpose - Single power supply	–40 to 105	SO 14 TAPE
LM224J	General purpose - Single power supply	–40 to 105	CERDIP 14
LM224N	General purpose - Single power supply	–40 to 105	DIP 14
LM246D	Programmable - Wide power supply range	–40 to 105	SO 16
LM246DT	Programmable - Wide power supply range	–40 to 105	SO 16 TAPE
LM246N	Programmable - Wide power supply range	–40 to 105	DIP 16
LM248D	Quad 741 - Low supply current drain	–40 to 105	SO 14
LM248DT	Quad 741 - Low supply current drain	–40 to 105	SO 14 TAPE
LM248J	Quad 741 - Low supply current drain	–40 to 105	CERDIP 14
LM248N	Quad 741 - Low supply current drain	–40 to 105	DIP 14
LM2902D	Low power - Single power supply - Automotive	–40 to 105	SO 14
LM2902DT	Low power - Single power supply - Automotive	–40 to 105	SO 14 TAPE
LM2902J	Low power - Single power supply - Automotive	–40 to 105	CERDIP 14
LM2902N	Low power - Single power supply - Automotive	–40 to 105	DIP 14
LM324AD	General purpose - Single power supply - Low input offset voltage	0 to 70	SO 14
LM324ADT	General purpose - Single power supply - Low input offset voltage	0 to 70	SO 14 TAPE
LM324AJ	General purpose - Single power supply - Low input offset voltage	0 to 70	CERDIP 14
LM324AN	General purpose - Single power supply - Low input offset voltage	0 to 70	DIP 14
LM324D	General purpose - Single power supply	0 to 70	SO 14
LM324DT	General purpose - Single power supply	0 to 70	SO 14 TAPE
LM324J	General purpose - Single power supply	0 to 70	CERDIP 14
LM324N	General purpose - Single power supply	0 to 70	DIP 14
LM346D	Programmable - Wide power supply range	0 to 70	SO 16
LM346DT	Programmable - Wide power supply range	0 to 70	SO 16 TAPE
LM346J	Programmable - Wide power supply range	0 to 70	CERDIP 16
LM346N	Programmable - Wide power supply range	0 to 70	DIP 16
LM348D	Quad 741 - Low supply current drain	0 to 70	SO 14
LM348DT	Quad 741 - Low supply current drain	0 to 70	SO 14 TAPE
LM348J	Quad 741 - Low supply current drain	0 to 70	CERDIP 14
LM348N	Quad 741 - Low supply current drain	0 to 70	DIP 14
MC3303D	Single power supply - Class AB output stage	–40 to 105	SO 14
MC3303DT	Single power supply - Class AB output stage	–40 to 105	SO 14 TAPE
MC3303J	Single power supply - Class AB output stage	–40 to 105	CERDIP 14
MC3303N	Single power supply - Class AB output stage	–40 to 105	DIP 14
MC3403D	Single power supply - Class AB output stage	0 to 70	SO 14
MC3403DT	Single power supply - Class AB output stage	0 to 70	SO 14 TAPE
MC3403J	Single power supply - Class AB output stage	0 to 70	CERDIP 14
MC3403N	Single power supply - Class AB output stage	0 to 70	DIP 14
MC3503J	Single power supply - Class AB output stage	–55 to 125	CERDIP 14
TEB4033D	Low distortion & noise - High channel separation	0 to 70	SO 14
TEB4033DT	Low distortion & noise - High channel separation	0 to 70	SO 14 TAPE
TEB4033N	Low distortion & noise - High channel separation	0 to 70	DIP 14
TEF4033D	Low distortion & noise - High channel separation	–40 to 105	SO 14
TEF4033DT	Low distortion & noise - High channel separation	–40 to 105	SO 14 TAPE
TEF4033N	Low distortion & noise - High channel separation	–40 to 105	DIP 14

COMPARATORS

SINGLE

Type	Description	Temperature range (°C)	Package
LM111D	Low input current - Single power supply voltage	–55 to 125	SO 8
LM111DT	Low input current - Single power supply voltage	–55 to 125	SO 8 TAPE
LM211D	Low input current - Single power supply voltage	–40 to 105	SO 8
LM211DT	Low input current - Single power supply voltage	–40 to 105	SO 8 TAPE
LM211N	Low input current - Single power supply voltage	–40 to 105	MINIDIP
LM311D	Low input current - Single power supply voltage	0 to 70	SO 8
LM311DT	Low input current - Single power supply voltage	0 to 70	SO 8 TAPE
LM311J	Low input current - Single power supply voltage	0 to 70	MINICERDIP
LM311N	Low input current - Single power supply voltage	0 to 70	MINIDIP

DUAL

Type	Description	Temperature range (°C)	Package
LM193AJ	Low power - Very low offset voltage	–55 to 125	MINICERDIP
LM193J	Low power - Low offset voltage	–55 to 125	MINICERDIP
LM193N	Low power - Low offset voltage	–55 to 125	MINIDIP
LM219D	High speed - Single supply operation	–40 to 105	SO 14
LM219DT	High speed - Single supply operation	–40 to 105	SO 14 TAPE
LM219N	High speed - Single supply operation	–40 to 105	DIP 14
LM2903D	Low power - Low offset voltage - Automotive	–40 to 105	SO 8
LM2903DT	Low power - Low offset voltage - Automotive	–40 to 105	SO 8 TAPE
LM2903J	Low power - Low offset voltage - Automotive	–40 to 105	MINICERDIP
LM2903N	Low power - Low offset voltage - Automotive	–40 to 105	MINIDIP
LM293AJ	Low power - Very low offset voltage	–40 to 105	MINICERDIP
LM293D	Low power - Low offset voltage	–40 to 105	SO 8
LM293DT	Low power - Low offset voltage	–40 to 105	SO 8 TAPE
LM293J	Low power - Low offset voltage	–40 to 105	MINICERDIP
LM293N	Low power - Low offset voltage	–40 to 105	MINIDIP
LM319D	High speed - Single supply operation	0 to 70	SO 14
LM319DT	High speed - Single supply operation	0 to 70	SO 14 TAPE
LM319J	High speed - Single supply operation	0 to 70	CERDIP 14
LM319N	High speed - Single supply operation	0 to 70	DIP 14
LM393AD	Low power - Very low offset voltage	0 to 70	SO 8
LM393ADT	Low power - Very low offset voltage	0 to 70	SO 8 TAPE
LM393AJ	Low power - Very low offset voltage	0 to 70	MINICERDIP
LM393AN	Low power - Very low offset voltage	0 to 70	MINIDIP
LM393D	Low power - Low offset voltage	0 to 70	SO 8
LM393DT	Low power - Low offset voltage	0 to 70	SO 8 TAPE
LM393J	Low power - Low offset voltage	0 to 70	MINICERDIP
LM393N	Low power - Low offset voltage	0 to 70	MINIDIP

COMPARATORS

QUAD

Type	Description	Temperature range (°C)	Package
LM139AJ	Very low power - Very low offset voltage	– 55 to 125	CERDIP 14
LM139J	Low power - Low offset voltage	– 55 to 125	CERDIP 14
LM139N	Low power - Low offset voltage	– 55 to 125	DIP 14
LM239AD	Very low power - Very low offset voltage	– 40 to 105	SO 14
LM239ADT	Very low power - Very low offset voltage	– 40 to 105	SO 14 TAPE
LM239AJ	Very low power - Very low offset voltage	– 40 to 105	CERDIP 14
LM239AN	Very low power - Very low offset voltage	– 40 to 105	DIP 14
LM239D	Low power - Low offset voltage	– 40 to 105	SO 14
LM239DT	Low power - Low offset voltage	– 40 to 105	SO 14 TAPE
LM239J	Low power - Low offset voltage	– 40 to 105	CERDIP 14
LM239N	Low power - Low offset voltage	– 40 to 105	DIP 14
LM2901D	Low power - Low offset voltage - Automotive	– 40 to 105	SO 14
LM2901DT	Low power - Low offset voltage - Automotive	– 40 to 105	SO 14 TAPE
LM2901J	Low power - Low offset voltage - Automotive	– 40 to 105	CERDIP 14
LM2901N	Low power - Low offset voltage - Automotive	– 40 to 105	DIP 14
LM339AD	Very low power - Very low offset voltage	0 to 70	SO 14
LM339ADT	Very low power - Very low offset voltage	0 to 70	SO 14 TAPE
LM339AJ	Very low power - Very low offset voltage	0 to 70	CERDIP 14
LM339AN	Very low power - Very low offset voltage	0 to 70	DIP 14
LM339D	Low power - Low offset voltage	0 to 70	SO 14
LM339DT	Low power - Low offset voltage	0 to 70	SO 14 TAPE
LM339J	Low power - Low offset voltage	0 to 70	CERDIP 14
LM339N	Low power - Low offset voltage	0 to 70	DIP 14
MC3302D	Low power - Low offset voltage	– 40 to 105	SO 14
MC3302DT	Low power - Low offset voltage	– 40 to 105	SO 14 TAPE
MC3302J	Low power - Low offset voltage	– 40 to 105	CERDIP 14
MC3302N	Low power - Low offset voltage	– 40 to 105	DIP 14

VOLTAGE REGULATORS

POSITIVE

Type	Description	Temperature range (°C)	Package
L78M05ABV	5 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M05CV	5 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M05CS	5 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M05CX	5 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M06ABV	6 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M06CV	6 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M06CS	6 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M06CX	6 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M08ABV	8 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M08CV	8 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M08CS	8 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M08CX	8 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M12ABV	12 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M12CV	12 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M12CS	12 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M12CX	12 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M15ABV	15 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M15CV	15 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M15CS	15 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M15CX	15 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M18ABV	18 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M18CV	18 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M18CS	18 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M18CX	18 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M20ABV	20 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M20CV	20 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M20CS	20 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M20CX	20 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78M24ABV	24 V, 0.5 A regulator 2 %	−40 to 125	TO 220
L78M24CV	24 V, 0.5 A regulator 4 %	0 to 125	TO 220
L78M24CS	24 V, 0.5 A regulator 4 %	0 to 125	SOT 194
L78M24CX	24 V, 0.5 A regulator 4 %	0 to 125	SOT 82
L78S05CT	5 V, 2 A regulator 4 %	0 to 125	TO 3
L78S05CV	5 V, 2 A regulator 4 %	0 to 125	TO 220
L78S09CT	9 V, 2 A regulator 4 %	0 to 125	TO 3
L78S09CV	9 V, 2 A regulator 4 %	0 to 125	TO 220
L78S10CT	10 V, 2 A regulator 4 %	0 to 125	TO 3
L78S10CV	10 V, 2 A regulator 4 %	0 to 125	TO 220
L78S12CT	12 V, 2 A regulator 4 %	0 to 125	TO 3
L78S12CV	12 V, 2 A regulator 4 %	0 to 125	TO 220
L78S15CT	15 V, 2 A regulator 4 %	0 to 125	TO 3
L78S15CV	15 V, 2 A regulator 4 %	0 to 125	TO 220
L78S18CT	18 V, 2 A regulator 4 %	0 to 125	TO 3
L78S18CV	18 V, 2 A regulator 4 %	0 to 125	TO 220
L78S24CT	24 V, 2 A regulator 4 %	0 to 125	TO 3
L78S24CV	24 V, 2 A regulator 4 %	0 to 125	TO 220
L78S75CT	7.5 V, 2 A regulator 4 %	0 to 125	TO 3
L78S75CV	7.5 V, 2 A regulator 4 %	0 to 125	TO 220
L7805ACV	5 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7805ABV	5 V, 1.5 A regulator 2 %	−40 to 125	TO 220
L7805CT	5 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7805CV	5 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7805T	5 V, 1.5 A regulator 4 %	−55 to 150	TO 3
L7806ACV	6 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7806ABV	6 V, 1.5 A regulator 2 %	−40 to 125	TO 220
L7806CT	6 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7806CV	6 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7806T	6 V, 1.5 A regulator 4 %	−55 to 150	TO 3
L7808ACV	8 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7808ABV	8 V, 1.5 A regulator 2 %	−40 to 125	TO 220
L7808CT	8 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7808CV	8 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7808T	8 V, 1.5 A regulator 4 %	−55 to 150	TO 3
L7885CT	8.5 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7885CV	8.5 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7812ACV	12 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7812ABV	12 V, 1.5 A regulator 2 %	−40 to 125	TO 220
L7812CT	12 V, 1.5 A regulator 4 %	0 to 125	TO 3

VOLTAGE REGULATORS

POSITIVE (Continued)

Type	Description	Temperature range (°C)	Package
L7812CV	12 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7812T	12 V, 1.5 A regulator 4 %	-55 to 150	TO 3
L7815ACV	15 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7815ABV	15 V, 1.5 A regulator 2 %	-40 to 125	TO 220
L7815CT	15 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7815CV	15 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7815T	15 V, 1.5 A regulator 4 %	-55 to 150	TO 3
L7818ACV	18 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7818ABV	18 V, 1.5 A regulator 2 %	-40 to 125	TO 220
L7818CT	18 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7818CV	18 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7818T	18 V, 1.5 A regulator 4 %	-55 to 150	TO 3
L7820ACV	20 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7820ABV	20 V, 1.5 A regulator 2 %	-40 to 125	TO 220
L7820CT	20 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7820CV	20 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7820T	20 V, 1.5 A regulator 4 %	-55 to 150	TO 3
L7824ACV	24 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7824ABV	24 V, 1.5 A regulator 2 %	-40 to 125	TO 220
L7824CT	24 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7824CV	24 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7824T	24 V, 1.5 A regulator 4 %	-55 to 150	TO 3
LM109K	5 V, 1 A regulator 6 %	-55 to 150	TO 3
LM123K	5 V, 3 A regulator 6 %	-55 to 150	TO 3
LM209K	5 V, 1 A regulator 6 %	-25 to 150	TO 3
LM223K	5 V, 3 A regulator 6 %	-25 to 150	TO 3
LM309K	5 V, 1 A regulator 4 %	0 to 125	TO 3
LM323K	5 V, 3 A regulator 4 %	0 to 125	TO 3

NEGATIVE

Type	Description	Temperature range (°C)	Package
L7905ACV	5 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7905CT	5 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7905CV	5 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7906CT	6 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7906CV	6 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7908ACV	8 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7908CT	8 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7908CV	8 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7912ACV	12 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7912CT	12 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7912CV	12 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7915ACV	15 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7915CT	15 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7915CV	15 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7918ACV	18 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7918CT	18 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7918CV	18 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7920ACV	20 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7920CT	20 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7920CV	20 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7922CT	22 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7922CV	22 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7924ACV	24 V, 1.5 A regulator 2 %	0 to 125	TO 220
L7924CT	24 V, 1.5 A regulator 4 %	0 to 125	TO 3
L7924CV	24 V, 1.5 A regulator 4 %	0 to 125	TO 220
L7952ACV	5.2 V, 1 A regulator 2 %	0 to 125	TO 220
L7952CT	5.2 V, 1 A regulator 4 %	0 to 125	TO 3
L7952CV	5.2 V, 1 A regulator 4 %	0 to 125	TO 220

VOLTAGE REGULATORS

ADJUSTABLE

Type	Description	Temperature range (°C)	Package
LM117K	1.2 - 37 V, 1.5 A positive regulator	-55 to 150	TO 3
LM138K	1.2 - 32 V, 5 A positive regulator	-55 to 150	TO 3
LM217K	1.2 - 37 V, 1.5 A positive regulator	-25 to 150	TO 3
LM217SP	1.2 - 37 V, 1.5 A positive regulator	-25 to 150	TO 220
LM238K	1.2 - 32 V, 5 A positive regulator	-25 to 150	TO 3
LM317K	1.2 - 37 V, 1.5 A positive regulator	0 to 125	TO 3
LM317T	1.2 - 37 V, 1.5 A positive regulator	0 to 125	TO 220
LM317ISP	1.2 - 37 V, 1.5 A positive regulator	-40 to 150	TO 220
LM338K	1.2 - 32 V, 5 A positive regulator	0 to 125	TO 3
LM723CD1	3 - 37 V precision positive regulator	0 to 70	SO 14
LM723CH	3 - 37 V precision positive regulator	0 to 70	TO 100
LM723CJ	3 - 37 V precision positive regulator	0 to 70	CERDIP 14
LM723CN	3 - 37 V precision positive regulator	0 to 70	DIP 14
LM723H	3 - 37 V precision positive regulator	-55 to 150	TO 100
LM723J	3 - 37 V precision positive regulator	-55 to 150	CERDIP 14
LM137K	1.2 - 37 V, 1.5 A negative regulator	-55 to 150	TO 3
LM237K	1.2 - 37 V, 1.5 A negative regulator	-25 to 150	TO 3
LM337K	1.2 - 37 V, 1.5 A negative regulator	0 to 125	TO 3
LM337SP	1.2 - 37 V, 1.5 A negative regulator	0 to 125	TO 220

DEDICATED FUNCTIONS

Type	Description	Package
L200	2 A adjustable regulator	PENTAWATT, TO 3 (4 lead)
L4901A	Dual 5 V regulator with reset	HEPTAWATT
L4902A	Dual 5 V regulator with reset/disable	HEPTAWATT
L4903	Dual 5 V regulator with reset/disable	MINIDIP
L4904A	Dual 5 V regulator with reset	MINIDIP
L4905	Dual 5 V regulator with reset	HEPTAWATT
L4915	Adjustable voltage regulator plus filter	4 + 4
L4916	Voltage regulator plus filter	4 + 4
L4918	Voltage regulator plus filter	PENTAWATT
L4940-5	1.5 A, 5 V low drop regulator	TO 220
L4940-10	1.5 A, 10 V low drop regulator	TO 220
L4940-12	1.5 A, 12 V low drop regulator	TO 220
L4940-85	1.5 A, 8.5 V low drop regulator	TO 220
L4941	1 A, 5 V low drop regulator	TO 220
TDA8134	Dual 5 V + 12 V with disable	HEPTAWATT
TDA8135	Dual 5 V with disable	HEPTAWATT
TDA8136	Dual 12 V with disable	HEPTAWATT
TEA5110	Dual 5 V	BATWING DIP 16
TEA7034	Low drop - out - 5 V - 500 mA - Load dump - Reset	PENTAWATT
TEA7105	Microprocessor dedicated - Watch dog - Reset - 5 V	DIP 16
TEA7605SP	Low drop - out - 5 V - 500 mA - load dump protection	TO 220
TEA7610	Low drop - out - 10 V	TO 220
TEA7685	Low drop - out - 8.5 V	TO 220

VOLTAGE REGULATORS

HIGH CURRENT SWITCHING

Type	Description	Package
L296/P	4 A Switching regulator	MULTIWATT 15
L4960	2.5 A Power switching regulator	HEPTAWATT
L4962	1.5 A Power switching regulator	HEPTAWATT, 12 + 2 + 2
L4963	1.5 A Power switching regulator	12 + 3 + 3
L4964	4 A Switching regulator	MULTIWATT 15
L4970	High current switching regulator	MULTIWATT 15
UAA4006B	Fixed frequency 3 A SMPS control circuit	DIP 16, MULTIWATT 15

OFF-LINE SWITCHING

PWM CONTROLLERS

Type	Description	Package
SG2524	Regulating pulse width modulator (from -25° to $+85^{\circ}\text{C}$)	DIP 16
SG2525A	Regulating pulse width modulator (from -25° to $+85^{\circ}\text{C}$)	DIP 16
SG2527A	Regulating pulse width modulator (from -25° to $+85^{\circ}\text{C}$)	DIP 16
SG3524	Regulating pulse width modulator (from 0 to $+70^{\circ}\text{C}$)	DIP 16
SG3525A	Regulating pulse width modulator (from 0 to $+70^{\circ}\text{C}$)	DIP 16
SG3527A	Regulating pulse width modulator (from 0 to $+70^{\circ}\text{C}$)	DIP 16
UAA4002	Power transistor driver	DIP 16
UAA4003	Switch mode regulator for DC motors	DIP 16
UC2524A	Regulating pulse width modulator (from -25° to $+85^{\circ}\text{C}$)	DIP 16
UC2840	Regulating pulse width modulator (from -25° to $+85^{\circ}\text{C}$)	DIP 18
UC2842/3/4/5	Regulating pulse width modulator (from -25° to $+85^{\circ}\text{C}$)	DIP 14, MINIDIP
UC3524A	Regulating pulse width modulator (from 0 to $+70^{\circ}\text{C}$)	DIP 16
UC3840	Regulating pulse width modulator (from 0 to $+70^{\circ}\text{C}$)	DIP 18
UC3842/3/4/5	Regulating pulse width modulator (from 0 to $+70^{\circ}\text{C}$)	DIP 14, MINIDIP

SWITCH MODE POWER SUPPLY ($P_{OUT} \leq 200 \text{ W}$)

Type	Description	Package
TDA4601/B	Free running frequency controller	DIP 18
TEA2018A	Current mode PWM controller	DIP 8
TEA2164	Master slave : Primary switching circuit	DIP 16
TEA5170	Master slave : Secondary controller	DIP 8

POWER CONTROLLERS - DRIVERS

SOLENOID / HAMMER / NEEDLE / RELAY

Type	Description	Package
L294	Switch-mode solenoid driver	MULTIWATT 11
L295	Dual switch-mode solenoid driver	MULTIWATT 15
L3654S	Printer solenoid driver	DIP 16
L5832	Solenoid controller	12 + 2 + 2
L6012/3/4	Darlington arrays	DIP 18
L6114	Quad DMOS switch with TTL input and enable	14 + 3 + 3
L6115	Quad DMOS switch with TTL input and enable	MULTIWATT 15
L6122/3	100 V DMOS switch	14 + 3 + 3, MULTIWATT 15
L6212	High current solenoid driver	MULTIWATT 15
L6220	Quad darlington switch	MULTIWATT 15/12 + 2 + 2
L6221A/N	Quad darlington switches	MULTIWATT 15/12 + 2 + 2
L6222	Quad transistor switch	12 + 2 + 2
L6503	Hammer solenoid controller	DIP 20
L6504	Solenoid controller	DIP 14
L702	2 A quad darlington array	MULTIWATT 11, DIP 16
L7150/52/80/82	Quad darlington switches	MULTIWATT 15
TDE1607	Intelligent power switch - $V_{CC} = 36\text{ V}$, $I_{OUT} = 0.3\text{ A}$	MINIDIP
TDE1647	Intelligent power switch - $V_{CC} = 45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	MINIDIP
TDE1737	Intelligent power switch - $V_{CC} = -45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	MINIDIP
TDE1747	Intelligent power switch - $V_{CC} = 45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	MINIDIP
TDE1767, A	Intelligent power switch - $V_{CC} = 45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	MINIDIP
TDE1787, A	Intelligent power switch - $V_{CC} = 60\text{ V}$, $I_{OUT} = 0.3\text{ A}$	MINIDIP
TDE1798	Intelligent power switch - $V_{CC} = 35\text{ V}$, $I_{OUT} = 0.5\text{ A}$	MINIDIP, DIP 16
TDE3207	Intelligent power switch - $V_{CC} = 36\text{ V}$, $I_{OUT} = 0.15\text{ A}$	MINIDIP
TDF1778	Intelligent power switch - $V_{CC} = 32\text{ V}$, $I_{OUT} = 2.5\text{ A (DUAL)}$	MULTIWATT 11
TDF1779 A	Intelligent power switch - $V_{CC} = 35\text{ V}$, $I_{OUT} = 2.5\text{ A (DUAL)}$	MULTIWATT 11
UAF1780/1/2	Dual 2 A low drop intelligent switch	MULTIWATT 15/DIP 16
ULN2001A/2A/3A/4A	Seven darlington arrays	DIP/SO 16
ULN2064B to ULN2071B	Quad darlington switches	12 + 2 + 2
ULN2074B to ULN2077B	Quad darlington switches	12 + 2 + 2
ULN2801A/2A/3A/4A/5A	Eight darlington arrays	DIP 18
ULQ2001R/2R/3R/4R	Seven darlington arrays	DIP 16 CERAMIC
VB100	High voltage intelligent power switch	MULTIWATT 11

UNIPOLAR STEPPER MOTORS

Type	Description	Package
L297/A	Stepper motor controllers	DIP 20
L6114	Quad DMOS switch with TTL input and enable	14 + 3 + 3
L6115	Quad DMOS switch with TTL input and enable	MULTIWATT 15
L6506	Current controller for stepping motors	DIP 18
L702	2 A quad darlington switch	MULTIWATT 11, DIP16
L7150/52/80/82	Quad darlington switches	MULTIWATT 15
ULN2064B to ULN2071B	Quad darlington switches	12 + 2 + 2
ULN2074B to ULN2077B	Quad darlington switches	12 + 2 + 2

BIPOLAR STEPPER MOTORS

Type	Description	Package
L293E	Push-pull four channel drivers	DIP 16, 16 + 2 + 2
L293C	Push-pull four channel / dual H-bridge driver	16 + 2 + 2
L293D	Push-pull four channel driver with diodes	16 + 2 + 2
L297/A	Stepper motor controllers	DIP 20
L298N	Dual full bridge driver	MULTIWATT 15
L6201	0.3 Ω DMOS full bridge driver	SO 20
L6202	0.3 Ω DMOS full bridge driver	12 + 3 + 3
L6203	0.3 Ω DMOS full bridge driver	MULTIWATT 15
L6210	Dual schottky diode bridge	12 + 2 + 2
L6217/A	Stepper motor driver	PLCC44
L6506	Current controller for stepping motors	DIP 18
MC3479C	Stepper motor driver	12 + 2 + 2
PBL3717A	Stepper motor driver	12 + 2 + 2
TEA3717	Stepper motor driver	BATWING DIP 16
TEA3718	Stepper motor driver - thermal protection	DIP 16, MULTIWATT 15
TEA3718S	Stepper motor driver - soft thermal protection	DIP 16, MULTIWATT 15
UAB/UAF4718	Stepper motor driver	MULTIWATT 15

POWER CONTROLLERS - DRIVERS

BRUSHLESS MOTORS

Type	Description	Package
L6230 L6231 L6235 L6236	Bidirectional three-phase brushless DC motor driver Three-phase brushless DC motor driver R-DAT brushless DC motor driver Bidirectional R-DAT brushless DC motor driver	MULTIWATT 15 MULTIWATT 15 PLCC20 PLCC20

DC MOTORS

Type	Description	Package
L149 L165 L290 L291 L292 L293/E L293C L293D L298N L6201 L6202 L6203 UAA4003	4 A linear driver 3 A power operational amplifier Tachometer converter 5 bit D/A converter and position amplifier Switch-mode driver for DC motors Push-pull four channel drivers Push-pull four channel / dual H-bridge driver Push-pull four channel driver with diodes Dual full bridge driver 0.3 Ω DMOS full bridge driver 0.3 Ω DMOS full bridge driver 0.3 Ω DMOS full bridge driver Switch mode regulator DC motors	PENTAWATT PENTAWATT DIP 16 DIP 16 MULTIWATT 15 DIP 16, 16 + 2 + 2 16 + 2 + 2 12 + 2 + 2 MULTIWATT 15 SO 20 12 + 3 + 3 MULTIWATT 15 DIP 16

DISPLAYS

Type	Description	Package
L3654S L601/2/3/4 M192B1 M5450B7 M5451B7 M5480B7 M5481B7 M5482B7 M5486B2 M8438A M8439 TDA4092 UCN4801A UEB4732 ULN2001A/2A/3A/4A ULQ2001R/2R/3R/4R	Printer solenoid driver Darlington arrays 7 segment LED driver 34 segment LED driver 35 segment LED driver 23 segment LED driver - 3.5 digit 14 segment LED driver - 2 digit 15 segment LED driver - 2 digit 33 segment LED driver 32 segment static LCD driver 32 segment static LCD driver Decoder driver - 7 segment - 2 digit General purpose octal latch driver AC plasma panel driver Seven darlington arrays Seven darlington arrays	DIP 16 DIP 18 DIP 16 DIP 40 DIP 40 DIP 28 DIP 28 DIP 20 DIP 20 DIP 40, PLCC 44 DIP 40 DIP 24 DIP 24 DIP 40 DIP 16 DIP 16 CERAMIC

ENCODERS / DECODERS

Type	Description	Package
M145026 M145027 M145028	RC encoder RC decoder RC decoder	DIP 16 DIP 16 DIP 16

POWER CONTROLLERS - DRIVERS

DEDICATED FUNCTIONS

Type	Description	Package
AM6012/A DAC0806/7/8 ESM 1600B ESM 1602B L6570A/B MC1488 MC1489/A	12-bit high speed multiplying D/A converters 8-bit D/A converters Industrial line driver Industrial line driver 2-channel floppy disk read/write circuits RS232C quad line driver Quad line receiver	DIP 20 DIP 16 DIP 16 DIP 14/DIP 16 DIP 28 DIP 14 DIP 14

BIPOLAR TIMERS

SINGLE

Type	Description	Temperature range (°C)	Package
NE555D NE555DT NE555J NE555N SA555D SA555DT SA555J SA555N SE555J	Astable or monostable operation Astable or monostable operation Astable or monostable operation Astable or monostable operation Astable or monostable operation Astable or monostable operation Astable or monostable operation Astable or monostable operation Astable or monostable operation	0 to 70 0 to 70 0 to 70 0 to 70 -40 to 105 -40 to 105 -40 to 105 -40 to 105 -55 to 125	SO 8 SO 8 tape MINICERDIP MINIDIP SO 8 SO 8 tape MINICERDIP MINIDIP MINICERDIP

DUAL

Type	Description	Temperature range (°C)	Package
NE556D NE556DT NE556J NE556N SA556D SA556DT SA556J SA556N SE556J	Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits Two independant 555 timing circuits	0 to 70 0 to 70 0 to 70 0 to 70 -40 to 105 -40 to 105 -40 to 105 -40 to 105 -55 to 125	SO 14 SO 14 tape CERDIP 14 DIP 14 SO 14 SO 14 tape CERDIP 14 DIP 14 CERDIP 14

DEDICATED FUNCTION

Type	Description	Package
M8716A	Clock / calendar	DIP 8

DEDICATED FUNCTIONS

Type	Description	Temperature range (°C)	Package
LM134Z	Adjustable current source	– 55 to 125	TO 92
LM135Z	Precision temperature sensor	– 55 to 125	TO 92
LM234Z	Adjustable current source	– 25 to 85	TO 92
LM235Z	Precision temperature sensor	– 25 to 85	TO 92
LM236AD	2.5 V voltage reference - precision	– 25 to 85	SO 8
LM236ADT	2.5 V voltage reference - precision	– 25 to 85	SO 8 tape
LM236AZ	2.5 V voltage reference - precision	– 25 to 85	TO 92
LM236D	2.5 V voltage reference	– 25 to 85	SO 8
LM236DT	2.5 V voltage reference	– 25 to 85	SO 8 tape
LM236Z	2.5 V voltage reference	– 25 to 85	TO 92
LM334Z	Adjustable current source	0 to 70	TO 92
LM335AZ	Precision temperature sensor - high accuracy	0 to 70	TO 92
LM335AD	Precision temperature sensor - high accuracy	0 to 70	SO 8
LM335ADT	Precision temperature sensor - high accuracy	0 to 70	SO 8 tape
LM335D	Precision temperature sensor	0 to 70	SO 8
LM335DT	Precision temperature sensor	0 to 70	SO 8 tape
LM335Z	Precision temperature sensor	0 to 70	TO 92
LM336BD	2.5 V voltage reference - precision	0 to 70	SO 8
LM336BDT	2.5 V voltage reference - precision	0 to 70	SO 8 tape
LM336BZ	2.5 V voltage reference - precision	0 to 70	TO 92
LM336D	2.5 V voltage reference	0 to 70	SO 8
LM336DT	2.5 V voltage reference	0 to 70	SO 8 tape
LM336Z	2.5 V voltage reference	0 to 70	TO 92
TDA0159ADP	Proximity detector	0 to 70	MINIDIP
TDA0159AFP	Proximity detector	0 to 70	SO 8
TDA0161CM	Proximity detector	– 40 to 140	TO 99
TDA0161DP	Proximity detector	– 40 to 100	MINIDIP
TDA0161FP	Proximity detector	– 40 to 100	SO 8
TDE0160DP	Proximity detector	– 25 to 85	DIP 14
TDE0160FP	Proximity detector	– 25 to 85	SO 14
TL7700ACD	Supply voltage supervisor	0 to 70	SO 8
TL7700ACP	Supply voltage supervisor	0 to 70	MINIDIP
TL7700AID	Supply voltage supervisor	– 25 to 85	SO 8
TL7700AIP	Supply voltage supervisor	– 25 to 85	MINIDIP

STANDARD LOGIC

CMOS 4000B SERIES

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{DD}	Supply voltage	3 to 18	V
V_I	Input voltage	0 to V_{DD}	V
T_{op}	Operating temperature (HCF series)	-40 to 85	°C
T_{op}	Operating temperature (HCC series)	-55 to 125	°C

HCC / HCF 4000B / 4500B / 40100B STANDARD SERIES

Type		Description	Package
4000B	H	Dual 3-Input NOR Gate plus inverter	DIP 14
4001B	CH	Quad 2-Input NOR Gate	DIP 14
4002B	CH	Dual 4-Input NOR Gate	DIP 14
4006B	CH	18-stage static shift register	DIP 14
4007UB	CH	Dual complementary pair plus inverter	DIP 14
4008B	CH	4-bit full adder	DIP 16
4009UB		Hex buffer/converter inverting	DIP 16
4010B		Hex buffer/converter non inverting	DIP 16
4011B	CH	Quad 2-input NAND gate	DIP 14
4012B	CH	Dual 4-input NAND gate	DIP 14
4013B	CH	Dual D flip-flop	DIP 14
4014B	CH	8-stage static syncr. shift register	DIP 16
4015B	CH	Dual 4-stage static shift register	DIP 16
4016B	CH	Quad bilateral switch	DIP 14
4017B	CH	Decade counter/divider	DIP 16
4018B	CH	Presettable divide-by «N» counter	DIP 16
4019B	H	Quad AND/OR select gate	DIP 16
4020B	CH	14-stage binary/ripple counter	DIP 16
4021B	CH	8-stage static shift register	DIP 16
4022B	CH	Divide-by-8 counter/divider	DIP 16
4023B	CH	Triple 3-input NAND gate	DIP 14
4024B	CH	7-stage binary/ripple counter	DIP 14
4025B	CH	Tripple 3-input NOR gate	DIP 14
4026B	H	Decade coun./div. 7-segm. display driver	DIP 16
4027B	CH	Dual J-K master-slave flip-flop	DIP 16
4028B	CH	BCD- to decimal decoder	DIP 16
4029B	CH	Presettable up/down counter	DIP 16
4030B	CH	Quad exclusive OR gate	DIP 14
4031B	H	64-stage static shift register	DIP 16
4032B	C	Triple serial adder	DIP 16
4033B		Decade coun./div. 7-segm. display driver	DIP 16
4034B	CH	8-stage static bidirectional bus register	DIP 24
4035B	CH	4-stage parallel I/O shift register	DIP 16
4038B	C	Triple serial adder	DIP 16
4040B	CH	12-stage binary/ripple counter	DIP 16
4041UB	H	Quad true/complement buffer	DIP 14
4042B	CH	Quad clocked D latch	DIP 16
4043B	CH	Quad 3-state NOR R/S latch	DIP 16
4044B	CH	Quad 3-state NAND R/S latch	DIP 16
4045B		21-stage counter	DIP 16
4046B	CH	Micropower phase locker loop	DIP 16
4047B	CH	Monostable/astable multivibrator	DIP 14
4048B	H	Multifunction expandable 8-input gate	DIP 16
4049UB	CH	Hex inverting buffer/converter	DIP 16
4050B	CH	Hex non inverting buffer/converter	DIP 16
4051B	CH	Single 8-channel analog multipl./demult.	DIP 16
4052B	C	Different. 4 channel analog multipl./dem.	DIP 16
4053B	CH	Triple 2-channel analog multiplexer/dem.	DIP 16
4054B		4-segment display driver	DIP 16

C = CECC approved.

H = ESA/SCC approved.

STANDARD LOGIC

HCC / HCF 4000B / 4500B / 40100B STANDARD SERIES (Continued)

Type		Description	Package
4055B		BCD to 7-segment decoder/driver	DIP 16
4056B		BCD to 7-segment decoder/driver	DIP 16
4060B	CH	14-stage counter/divider AND oscillator	DIP 16
4063B	H	4-bit magnitude comparator	DIP 16
4066B	CH	Quad bilateral switch	DIP 14
4067B	H	Single 16-channel analog multiplexer/dem.	DIP 24
4068B	CH	8-input NAND/AND gate	DIP 14
4069UB	CH	Hex inverter	DIP 14
4070B	CH	Quad ex-OR gate	DIP 14
4071B	CH	Quad 2-input OR gate	DIP 14
4072B	CH	Dual 4-input OR gate	DIP 14
4073B	CH	Triple 3-input AND gate	DIP 14
4075B	CH	Triple 3-input OR gate	DIP 14
4076B	CH	4-bit D-type register	DIP 16
4077B	CH	Quad ex-NOR gate	DIP 14
4078B	CH	8-input NOR/OR gate	DIP 14
4081B	CH	Quad 2-input AND gate	DIP 14
4082B	CH	Dual 4-input AND gate	DIP 14
4085B	CH	Dual 2-wide 2-input AND-OR-inverter gate	DIP 14
4086B	H	Expand. 4-wide 2-input AND-OR-inverter gate	DIP 14
4089B	H	Binary rate multiplexer	DIP 16
4093B	CH	Quad 2-input NAND schmitt trigger	DIP 14
4094B	CH	8-stage shift-AND-store bus register	DIP 16
4095B		Gated J-K master-slave flip-flop	DIP 14
4096B		Gated J-K master-slave flip-flop	DIP 14
4097B		Different. 8-channel analog multipl./dem.	DIP 24
4098B	CH	Dual monostable multivibrator	DIP 16
4099B	CH	8-bit addressable latch	DIP 16
4502B	CH	Strobed hex inverter/buffer	DIP 16
4503B	CH	Hex buffer (3-state non-inverter)	DIP 16
4508B	CH	Dual 4-bit latch (3-state outputs)	DIP 24
4510B	CH	Presetable 4-bit BCD up/down counter	DIP 16
4511B	C	BCD to 7 segment latch-decoder/driver	DIP 16
4512B	CH	8-channel data selec.with 3-state output	DIP 16
4514B	CH	4-bit latch/4-to-16 line dec. (out. high)	DIP 24
4515B	CH	4-bit latch/4-to-16 line dec. (out. low)	DIP 24
4516B	CH	Presetable 4-bit binary up/down counter	DIP 16
4517B	C	Dual 64-stage static shift register	DIP 16
4518B	CH	Dual BCD up counter	DIP 16
4520B	CH	Dual binary up counter	DIP 16
4527B	CH	BCD rate multiplier	DIP 16
4532B	CH	8-input priority encoder	DIP 16
4536B	C	Programmable timer	DIP 16
4538B	C	Dual precision monostable multivibrator	DIP 16
4541B		Programmable timer	DIP 14
4555B	CH	Dual 1-of-4 decoder/demultipl. (out. high)	DIP 16
4556B	CH	Dual 1-of-4 decoder/demultipl. (out. low)	DIP 16
4585B	C	4-bit magnitude comparator	DIP 16
40100B		32-stage static left/right shift register	DIP 16
40101B	H	9-bit parity generator/checker	DIP 14
40102B		Presetable 2-decade BCD down counter	DIP 16
40103B	H	Presetable 8-bit binary down counter	DIP 16
40104B	H	4-bit bidirectional universal shift register	DIP 16
40105B	H	4-bit × 16 word	DIP 16
40106B	H	Hex schmitt trigger	DIP 14
40107B	H	Dual 2-input NAND buffer/driver	DIP 8
40108B	H	4 × 4 multiport register	DIP 24
40109B	H	Quad low-to-high voltage level shifter	DIP 16
40110B		Decade up down counter/dec./latch/driver	DIP 16
40160B	H	Decade counter/asynchronous clear	DIP 16
40161B	H	Binary counter/asynchronous clear	DIP 16
40162B		Decade counter/synchronous clear	DIP 16
40163B		Binary counter/synchronous clear	DIP 16
40174B	H	Hex «D»	DIP 16
40181B	H	4-bit arithmetic logic unit	DIP 24
40182B	H	Look-ahead carry generator	DIP 16
40192B		Presetable 4-bit BCD up/down counter	DIP 16
40193B	H	Presetable 4-bit binary up/down counter	DIP 16
40194B	H	4-bit bidirectional universal shift register	DIP 16
40208B	H	4 × 4 multiport register	DIP 24
40257B	H	Quad 2-line-to-1-line data selector/mult.	DIP 16
4724B		8-bit addressable latch	DIP 16

C = CECC approved.

H = ESA/SCC approved.

STANDARD LOGIC

CROSSPOINT

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{DD}	Supply voltage	3 to 18	V
V_I	Input voltage	0 to V_{DD}	V
T_{op}	Operating temperature (Plastic pack)	-40 to 85	°C
T_{op}	Operating temperature (Ceramic pack)	-55 to 125	°C

Type	Description	Package
M22100	4 × 4 crosspoint switches with contr. memory	DIP 16
M22101	4 × 4 × 2 crosspoint switches with contr. memory	DIP 24
M22102	4 × 4 × 2 crosspoint switches with contr. memory	DIP 24

HS-C²MOS M54HC / 74HC SERIES-LSTTL SPEED CMOS LOW POWER

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{CC}	Supply voltage	2 to 6	V
V_I	Input voltage	0 to V_{CC}	V
T_A	Operating temperature (74 series)	-40 to 85	°C
T_A	Operating temperature (54 series)	-55 to 125	°C

M54 / 74HC SERIES

Type	Description	Package
HC00	C Quad 2-Input NAND Gate	DIP 14
HC02	C Quad 2-Input NOR Gate	DIP 14
HC03	C Quad 2-Input NAND (open drain)	DIP 14
HC04	C Hex inverter	DIP 14
HCT04	C Hex inverter	DIP 14
HCU04	C Hex inverter (single stage)	DIP 14
HC08	C Quad 2-input AND gate	DIP 14
HC10	C Triple 3-input NAND gate	DIP 14
HC11	C Triple 3-input AND gate	DIP 14
HC14	C Hex schmitt inverter	DIP 14
HC20	C Dual 4-input NAND gate	DIP 14
HC21	C Dual 4-input AND gate	DIP 14
HC27	C Triple 3-input NOR gate	DIP 14
HC30	C 8-input NAND gate	DIP 14
HC32	C Quad 2-input OR gate	DIP 14
HC42	C BCD to decimal decoder	DIP 16
HC51	C Dual 2-wide 2-inp/3-inp. AND-OR inv. gate	DIP 14
HC73	C Dual J-K flip-flop with clear	DIP 14
HC74	C Dual D-type flip-flop with preset and clear	DIP 14
HC75	C 4-bit D-type latch	DIP 16
HC76	C Dual J-K flip-flop with preset and clear	DIP 16
HC77	C 4-bit D-type latch	DIP 14
HC85	C 4-bit magnitude comparator	DIP 16
HC86	C Quad exclusive OR gate	DIP 14
HC107	C Dual J-K flip-flop with clear	DIP 14

C = CECC approved.

STANDARD LOGIC

M54 / 74HC SERIES (Continued)

Type		Description	Package
HC109	C	Dual J-K flip-flop with preset and clear	DIP 16
HC112	C	Dual J-K flip-flop with preset and clear	DIP 16
HC113	C	Dual J-K flip-flop with preset	DIP 14
HC123	C	Dual retrigg.monost. mult. with clear	DIP 16
HC125	C	Quad bus buffer (3-state)	DIP 14
HC126	C	Quad bus buffer (3-state)	DIP 14
HC131	C	3 to 8 line decoder latch	DIP 16
HC132	C	Quad 2-input schmitt NAND gate	DIP 14
HC133	C	13-input NAND gate	DIP 16
HC137	C	3 to 8 line decoder latch (inv.)	DIP 16
HCT137	C	3 to 8 line decoder latch (inv.)	DIP 16
HC138	C	3 to 8 line decoder (inv.)	DIP 16
HCT138	C	3 to 8 line decoder (inv.)	DIP 16
HC139	C	Dual 2 to 4 line decoder/demultiplexer	DIP 16
HC147	C	10 to 4 line priority encoder	DIP 16
HC148	C	8 to 3 line priority encoder	DIP 16
HC151	C	8-channel multiplexer	DIP 16
HC153	C	Dual 4-channel multiplexer	DIP 16
HC154	C	4 to 16 line decoder/demultiplexer	DIP 24
HC155	C	Dual 2 to 4 line dec./3 to 8 line dec.	DIP 16
HC157	C	Quad 2-channel multiplexer	DIP 16
HC158	C	Quad 2-channel multiplexer (inv.)	DIP 16
HC160	C	Sync. decade counter with async. clear	DIP 16
HC161	C	Sync. binary counter with async. clear	DIP 16
HC162	C	Sync. decade counter with sync. clear	DIP 16
HC163	C	Sync. binary counter with sync. clear	DIP 16
HC164	C	8 bit SIPO shift register	DIP 14
HC165	C	8 bit PISO shift register	DIP 16
HC166	C	8 bit PISO shift register	DIP 16
HC173	C	Quad D-type register (3-state)	DIP 16
HC174	C	Hex D-type flip-flop with clear	DIP 16
HC175	C	Quad D-type flip-flop with clear	DIP 16
HC181	C	Arithmetic logic unit function generator	DIP 24
HC182	C	Function look ahead carry generator	DIP 16
HC190	C	BCD asynchronous up/down counter	DIP 16
HC191	C	4 bit synchronous binary up/down counter	DIP 16
HC192	C	Synchronous up/down decade counter	DIP 16
HC193	C	Synchronous up/down binary counter	DIP 16
HC194	C	4 bit PIPO shift register	DIP 16
HC195	C	4 bit PIPO shift register	DIP 16
HC221	C	Dual monostable multivibrator	DIP 16
HC237	C	3 to 8 line decoder latch	DIP 16
HC238	C	3 to 8 line decoder	DIP 16
HC240	C	Octal bus buffer (3-state/inv.)	DIP 20
HCT240	C	Octal bus buffer (3-state/inv.)	DIP 20
HC241	C	Octal bus buffer (3-state)	DIP 20
HCT241	C	Octal bus buffer (3-state)	DIP 20
HC242	C	Quad bus transceiver (3-state/inv.)	DIP 14
HC243	C	Quad bus transceiver (3-state)	DIP 14
HC244	C	Octal bus buffer (3-state)	DIP 20
HCT244	C	Octal bus buffer (3-state)	DIP 20
HC245	C	Octal bus transceiver (3-state)	DIP 20
HCT245	C	Octal bus transceiver (3-state)	DIP 20
HC251	C	8-channel multiplexer (3-state)	DIP 16
HC253	C	Dual 4-channel multiplexer (3-state/inv.)	DIP 16
HC257	C	Quad 2-channel multiplexer (3-state)	DIP 16
HC258	C	Quad 2-channel multiplexer (3-state/inv.)	DIP 16
HC259	C	8 bit addressable latch	DIP 16
HC273	C	Octal D-type flip-flop with clear	DIP 20
HC279	C	Quad S-R latch	DIP 16
HC280	C	9 bit parity generator	DIP 14
HC283	C	4 bit binary full adder	DIP 16
HC292	C	Programmable divider/timer	DIP 16
HC294	C	Programmable divider/timer	DIP 16
HC298	C	Quad 2-channel multiplexer register	DIP 16
HC299	C	8 bit PIPO shift register (3-state)	DIP 20
HC323	C	8 bit PIPO shift register (3-state)	DIP 20
HC352	C	Dual 4-channel multiplexer (inv.)	DIP 16
HC353	C	Dual 4-channel multiplexer (3-state/inv.)	DIP 16
HC354	C	8 channel multiplexer/register (3-state)	DIP 20
HC356	C	8 channel multiplexer/register (3-state)	DIP 20
HC365	C	Hex bus buffer (3-state)	DIP 16
HC366	C	Hex bus buffer (3-state/inv.)	DIP 16
HC367	C	Hex bus buffer (3-state)	DIP 16
HC368	C	Hex bus buffer (3-state/inv.)	DIP 16
HC373	C	Octal D-type latch (3-state)	DIP 20
HCT373	C	Octal D-type latch (3-state)	DIP 20
HC374	C	Octal D-type flip-flop (3-state)	DIP 20

C = CECC approved.

STANDARD LOGIC

M54 / 74HC SERIES (Continued)

Type		Description	Package
HCT374	C	Octal D-type flip-flop (3-state)	DIP 20
HC375	C	Quad D-type latch	DIP 16
HC377	C	Octal D-type flip-flop	DIP 20
HC386	C	Quad exclusive OR gate	DIP 14
HC390	C	Dual decade counter	DIP 16
HC393	C	Dual binary counter	DIP 14
HC423	C	Dual monostable multivibrator with clear	DIP 16
HC533	C	Octal D-type latch (3-state/inv.)	DIP 20
HC534	C	Octal D-type flip-flop (3-state/inv.)	DIP 20
HC540	C	Octal bus buffer (3-state/inv.)	DIP 20
HCT540	C	Octal bus buffer (3-state/inv.)	DIP 20
HC541	C	Octal bus buffer (3-state)	DIP 20
HCT541	C	Octal bus buffer (3-state)	DIP 20
HC563	C	Octal D-type latch (3-state/inv.)	DIP 20
HCT563	C	Octal D-type latch (3-state/inv.)	DIP 20
HC564	C	Octal D-type flip-flop (3-state/inv.)	DIP 20
HCT564	C	Octal D-type flip-flop (3-state/inv.)	DIP 20
HC573	C	Octal D-type latch (3-state)	DIP 20
HCT573	C	Octal D-type latch (3-state)	DIP 20
HC574	C	Octal D-type flip-flop (3-state)	DIP 20
HCT574	C	Octal D-type flip-flop (3-state)	DIP 20
HC590	C	8 bit binary counter register (3-state)	DIP 16
HC595	C	8 bit shift register output latch (3-state)	DIP 16
HC597	C	8 bit latch shift register	DIP 16
HC620	C	Octal bus transceiver (3-state/inv.)	DIP 20
HC623	C	Octal bus transceiver (3-state)	DIP 20
HC640	C	Octal bus transceiver (3-state/inv.)	DIP 20
HCT640	C	Octal bus transceiver (3-state/inv.)	DIP 20
HC643	C	Octal bus transceiver (3-state)	DIP 20
HCT643	C	Octal bus transceiver (3-state)	DIP 20
HC646	C	Octal bus transceiver register (3-state)	DIP 24
HCT646	C	Octal bus transceiver register (3-state)	DIP 24
HC648	C	Octal bus transceiver register (3-state/inv.)	DIP 24
HCT648	C	Octal bus transceiver register (3-state/inv.)	DIP 24
HC651	C	Octal bus transceiver register (3-state/inv.)	DIP 24
HCT651	C	Octal bus transceiver register (3-state/inv.)	DIP 24
HC652	C	Octal bus transceiver register	DIP 24
HCT652	C	Octal bus transceiver register	DIP 24
HC670	C	4 word x 4 bit register file (3-state)	DIP 16
HC688	C	8 bit equality comparator	DIP 20
HC690	C	Decade counter register (3-state)	DIP 20
HC691	C	4 bit binary counter register (3-state)	DIP 20
HC692	C	Decade counter register (3-state)	DIP 20
HC693	C	4 bit binary counter register (3-state)	DIP 20
HC696	C	U/D decade counter register (3-state)	DIP 20
HC697	C	U/D 4-bit binary counter/register (3-state)	DIP 20
HC698	C	U/D decade counter register (3-state)	DIP 20
HC699	C	U/D 4-bit binary counter/register (3-state)	DIP 20
HC4002	C	Dual 4-input NOR gate	DIP 14
HC4017	C	Decade counter/divider	DIP 16
HC4020	C	14-stage binary counter	DIP 16
HC4022	C	Octal counter/divider	DIP 16
HC4024	C	7-stage binary counter	DIP 14
HC4028	C	BCD to decimal decoder	DIP 16
HC4040	C	12-stage binary counter	DIP 16
HC4049B	C	Hex buffer/converter (inv.)	DIP 16
HC4050B	C	Hex buffer/converter	DIP 16
HC4052	C	Dual 4-channel analog multiplexer/demultiplexer	DIP 16
HC4053	C	Triple 4-channel analog multiplexer/demultiplexer	DIP 16
HC4060	C	14-stage binary counter/oscillator	DIP 16
HC4066	C	Quad bilateral switch	DIP 14
HC4072	C	Dual 4-input OR gate	DIP 14
HC4075	C	Triple 3-input OR gate	DIP 14
HC4078	C	8-input NOR/OR gate	DIP 14
HC4094	C	8 bit SIPO shift register latch (3-state)	DIP 16
HC40102	C	Dual BCD programmable down counter	DIP 16
HC40103	C	8 bit binary programmable down counter	DIP 16
HC4316	C	Quad bilateral switches	DIP 16
HC4511	C	BCD to 7-segment L/D/D (LED)	DIP 16
HC4514	C	4 to 16 line decoder latch	DIP 24
HC4515	C	4 to 16 line decoder latch (inv.)	DIP 24
HC4518	C	Dual decade counter	DIP 16
HC4520	C	Dual 4 bit binary counter	DIP 16
HC4538	C	Dual monostable multivibrator	DIP 16
HC4543	C	BCD to 7-segment L/D/D (LCD)	DIP 16
HCT7007	C	Hex buffer	DIP 14
HC7266	C	Quad exclusive NOR gate	DIP 14
HC7292	C	Programmable divider/timer	DIP 16
HC7294	C	Programmable divider/timer	DIP 16

C = CECC approved.

STANDARD LOGIC

LOW POWER SCHOTTKY - TTL - T54/T74LS SERIES

GUARANTEED OPERATING RANGES

Type	Supply voltage			Value	Unit
	Min.	Typ.	Max.		
T54LSXXXD2	4.5	5.0	5.5	-55 to +125	°C
T74LSXXXYY	4.75	5.0	5.25	0 to 70	°C

YY = package type

TTL - T54 / T74LS SERIES

Type	Description		Package
LS00	C	Quad 2-Input NAND Gate	DIP 14
LS01		Quad 2-Input NAND Gate (open collector)	DIP 14
LS02	C	Quad 2-Input NOR Gate	DIP 14
LS03A		Quad 2-Input NAND (open collector)	DIP 14
LS04	C	Hex inverter	DIP 14
LS05A	C	Hex inverter (open collector)	DIP 14
LS08	C	Quad 2-input AND gate	DIP 14
LS09	C	Quad 2-input AND gate (open collector)	DIP 14
LS10	C	Triple 3-input NAND gate	DIP 14
LS11	C	Triple 3-input AND gate	DIP 14
LS12		Triple 3-input NAND gate (open collector)	DIP 14
LS13		Dual 4-input NAND schmitt trigger	DIP 14
LS14	C	Hex schmitt trigger inverter	DIP 14
LS15	C	Triple 3-input AND gate (open collector)	DIP 14
LS20	C	Dual 4-input NAND gate	DIP 14
LS21		Dual 4-input AND gate	DIP 14
LS22	C	Dual 4-input NAND gate (open collector)	DIP 14
LS26A		Quad 2-Input NAND buffer (open collector)	DIP 14
LS27	C	Triple 3-input NOR gate	DIP 14
LS28	C	Quad 2-input NOR buffer	DIP 14
LS30	C	8-input NAND gate	DIP 14
LS32	C	Quad 2-input OR gate	DIP 14
LS33	C	Quad 2-input NOR buffer (open collector)	DIP 14
LS37	C	Quad 2-input NAND buffer	DIP 14
LS38	C	Quad 2-input NAND buffer (open collector)	DIP 14
LS40	C	Dual 4-input NAND buffer	DIP 14
LS42	C	1-of 10 decoder	DIP 16
LS51		Dual 2-wide 2-inp/3-inp.AND-OR INV. gate	DIP 14
LS54	C	2-3-3-2 input AND-OR-INVERT gate	DIP 14
LS55	C	2-wide 4-input AND-OR INVERT gate	DIP 14
LS74A	C	Dual D-type posit. edge-trigg. flip-flop	DIP 14
LS75		4-bit D latch	DIP 16
LS83A	C	4-bit full adder with fast carry	DIP 16
LS86		Quad 2-input exclusive OR gate	DIP 14
LS90		Decade counter	DIP 14
LS93	C	4-bit binary counter	DIP 14
LS95B		4-bit shift register	DIP 14
LS109A		Dual JK positive edge-trigger. flip-flop	DIP 16
LS112A		Dual JK negative edge-trigger. flip-flop	DIP 16
LS113A		Dual JK negative edge-trigger. flip-flop	DIP 14
LS125A	C	Quad 3-state buffer (LOW enable)	DIP 14
LS126A	C	Quad 3-state buffer (HIGH enable)	DIP 14
LS132	C	Quad 2-input schmitt trigger NAND gate	DIP 14
LS133	C	13-input NAND gate	DIP 16
LS136	C	Quad 2-input exclus. OR gate (open coll.)	DIP 14
LS138	C	1-of-8 decoder/demultiplexer	DIP 16
LS139		Dual 1-of-4 decoder/demultiplexer	DIP 16
LS148		8-input to 3-line priority encoder	DIP 16

C = CECC approved.

STANDARD LOGIC

TTL - T54 / T74LS SERIES (Continued)

Type		Description	Package
LS151	C	8-input multiplexer	DIP 16
LS152		8-input multiplexer	DIP 14
LS153		Dual 4-input multiplexer	DIP 16
LS155	C	Dual 1-of-4 decoder/demultiplexer	DIP 16
LS156	C	Dual 1-of-4 decoder/demultiplexer (open coll.)	DIP 16
LS157	C	Quad 2-input multiplexer (non inverting)	DIP 16
LS158	C	Quad 2-input multiplexer (inverting)	DIP 16
LS164	C	8 bit shift register (serial-in par.-out)	DIP 14
LS166		8 bit shift register (par. in serial-out)	DIP 16
LS168		Up/Down decade counter	DIP 16
LS169		Up/Down binary counter	DIP 16
LS170	C	4 × 4 register file (open collector)	DIP 16
LS174	C	Hex D-type flip-flop with clear	DIP 16
LS175	C	Quad D-type flip-flop with clear	DIP 16
LS181		4-bit ALU	DIP 24
LS190		Presetable BCD/decade up/down counter	DIP 16
LS191		Presetable 4-bit binary up/down counter	DIP 16
LS192	C	Presetable BCD/decade up/down counter	DIP 16
LS193	C	Presetable 4-bit binary up/down counter	DIP 16
LS194A	C	4-bit right/left shift register	DIP 16
LS195A	C	4-bit shift register	DIP 16
LS196		Decade counter	DIP 14
LS197		4-bit binary counter	DIP 14
LS240	C	Octal inverting bus/line driver (3-state)	DIP 20
LS241		Octal bus line driver (3-state)	DIP 20
LS244		Octal non inverting driver (3-state)	DIP 20
LS245		Octal non inverting bus transceiver (3-state)	DIP 20
LS248		BCD to 7-segment dec./driv. with full-ups	DIP 16
LS251		8-input multiplexer (3-state)	DIP 16
LS253		Dual 4-input multiplexer (3-state)	DIP 16
LS256		Dual 4-bit addressable latch	DIP 16
LS257A		Quad 2-input multiplexer (3-state)	DIP 16
LS258A	C	Quad 2-input multiplexer (3-state)	DIP 16
LS259	C	8-bit addressable latch	DIP 16
LS260		Dual 5-input NOR gate	DIP 14
LS266	C	Quad 2-input exclud. NOR gate (open coll.)	DIP 14
LS273	C	Octal D-type flip-flop with master reset	DIP 20
LS279	C	Quad set-reset latch	DIP 16
LS280	C	9-bit odd/even parity generator/checker	DIP 14
LS283	C	4-bit binary full adder (rotated LS83A)	DIP 16
LS293	C	4-bit binary counter	DIP 14
LS295A		4-bit shift register (3-state)	DIP 14
LS298	C	Quad 2-input multiplexer with output lat.	DIP 16
LS352	C	Dual 4-input multiplexer (inver. LS153)	DIP 16
LS353	C	Dual 4-input multiplexer (3-state LS352)	DIP 16
LS365A		Hex buffer with common enable (3-state)	DIP 16
LS366A		Hex inverting buffer with common enable (3-state)	DIP 16
LS367A	C	Hex buffer, 4-bit and 3-bit(3-state)	DIP 16
LS368A		Hex inverting buffer, 4-bit and 2-bit (3-state)	DIP 16
LS373		Octal transparent latch (3-state)	DIP 20
LS374	C	Octal D-type flip-flop (3-state)	DIP 20
LS377	C	Octal D-type flip-flop with common enable	DIP 20
LS378	C	Hex D-type flip-flop with enable	DIP 16
LS379	C	4-bit D-type flip-flop with enable	DIP 16
LS390		Dual decade counter	DIP 16
LS393	C	Dual 4-bit binary counter	DIP 14
LS395	C	4-bit shift register (3-state)	DIP 16
LS399		Quad 2-input multiplexer with output reg.	DIP 16
LS490		Dual decade counter	DIP 16
LS533		Octal transparent latch (3-state)	DIP 20
LS534		Octal D-type flip-flop (3-state)	DIP 20
LS540		Octal inverting buffer/line driver (3-state)	DIP 20
LS541		Octal buffer/line driver (3-state)	DIP 20
LS645		Octal non inverting bus transceiver (3-state)	DIP 20
LS670	C	4 × 4 register file (3-state)	DIP 16

C = CECC approved.

STANDARD LOGIC

PROGRAMMABLE LOGIC DEVICES (PLD)
 GAL[®] - E²CMOS[™] SERIES (1)
 RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V _{CC}	Supply voltage	4.65 to 5.25	V
T _A	Operating temperature	0 to 70	°C

Type	Description	Package
GAL16V8-20HB1	Generic array logic - 20 nsec/16 PT	DIP 20
GAL16V8-25HB1	Generic array logic - 25 nsec/16 PT	DIP 20
GAL20V8-20HB1	Generic array logic - 20 nsec/20 PT	DIP 24
GAL20V8-25HB1	Generic array logic - 25 nsec/20 PT	DIP 24

(1) GAL is a registered trade mark of LATTICE SEMICONDUCTORS CORPORATION.
 E²CMOS is a trade mark of LATTICE SEMICONDUCTORS CORPORATION.

MODULES & BOARDS

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SWITCHING VOLTAGE REGULATORS

Type	Description	Package
GS-R400V	Adjustable 4 A, 5.1 to 40 V output ; V_{in} up to 46 V	A\
GS-R400VB	Like GS-R400V with adjustable current. syncr. module	A
GS-R400V-HV	Adjustable 4 A, 5.1 to 40 V output ; V_{in} up to 72 V	A
GS-R405	5 V/4 A Fixed output ; V_{in} up to 46 V	A
GS-R405-HV	5 V/4 A Fixed output ; V_{in} up to 72 V	A
GS-R405S	5 V/4 A Fixed output with reset ; V_{in} up to 46 V	A
GS-R405/2	5 V/4 A Fixed output. V_{in} up to 40 V ; small size	B
GS-R412	12 V/4 A Fixed output ; V_{in} up to 46 V	A
GS-R412-HV	12 V/4 A Fixed output ; V_{in} up to 72 V	A
GS-R412/2	12 V/4 A Fixed output. V_{in} up to 40 V ; small size	B
GS-R415	15 V/4 A Fixed output ; V_{in} up to 46 V	A
GS-R424	24 V/4 A Fixed output ; V_{in} up to 46 V	A
GS-R51212	Triple output voltages ; 5 V/3.5 A, \pm 12 V/0.1 A isolated outputs	A

Common features : soft start, thermal protection, crow bar protection for the load.

DC / DC CONVERTERS

Type	Description	Package
GS-I0509	5 V input ; 9 V/250 mA output	C
GS-I555	5 V input ; \pm 5 V/200 mA output	C
GS-I51212	5 V input ; \pm 12 V/100 mA output	C
GS-I51515*	24 V input ; 5 V/250 mA, \pm 15 V/125 mA output	D
GS-I1209	12 V input ; 9 V/250 mA output	C
GS-I25-0500**	36÷72 V input ; 5 V/5 A output	E

Common feature : input/output isolation.
 * Triple outputs ; remote ON/OFF control.
 ** Output overvoltage protection, remote ON/OFF control, remote sense compensation, six-sided continuous shield.

STEPPER MOTOR DRIVERS AND CONTROLLERS

Type	Description	Package
GS-C200	Programmable intelligent stepper motor controller	F
GS-D050	0.5 A chopped bipolar stepper motor driver	B
GS-D200	2 A chopped bipolar stepper motor driver	A
GS-D200S*	2.5 A chopped bipolar stepper motor driver	A

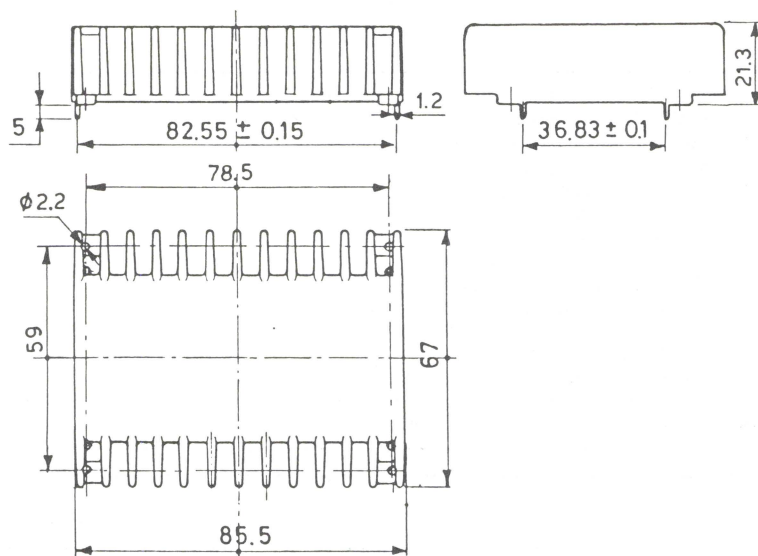
* Fully protected outputs.

MOTION CONTROL BOARDS

Type	Description	Package
GS-DC200	Board with a GS-C200 controller and a GS-D200 driver	G
GS-DC200S	Board with a GS-C200 controller and a GS-D200S driver	G
GS-D550	5 phases and 2 phases stepper motor board	G

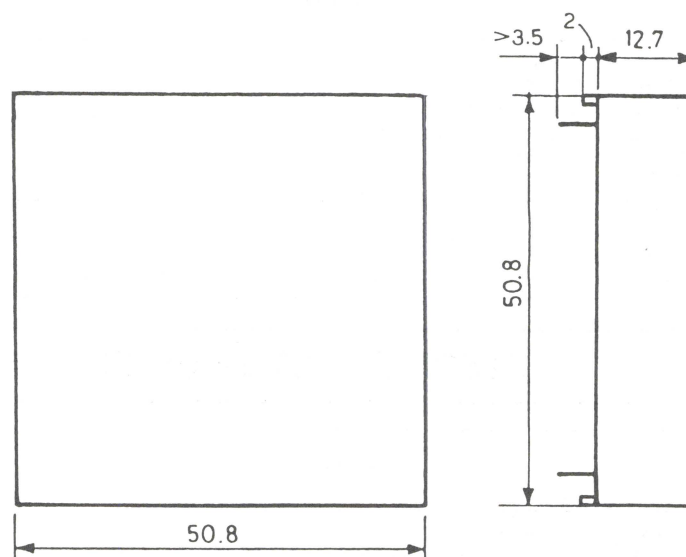
MECHANICAL DATA

A



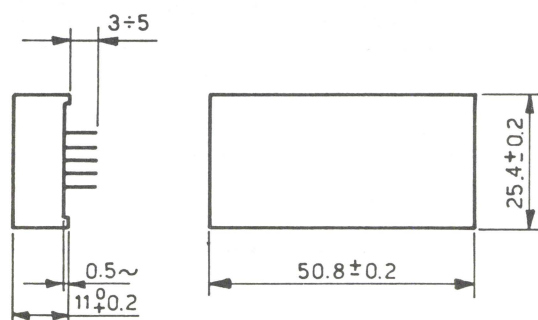
Dimensions in mm

B



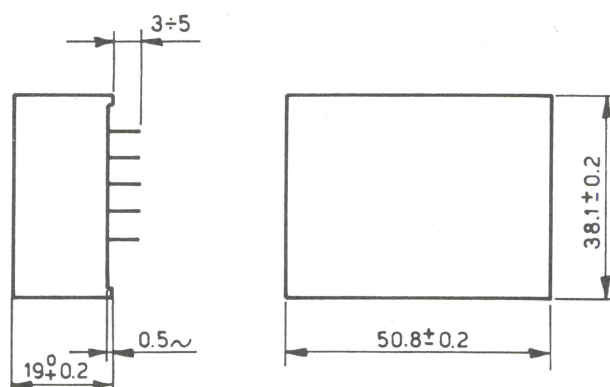
Dimensions in mm

C



Dimensions in mm

D

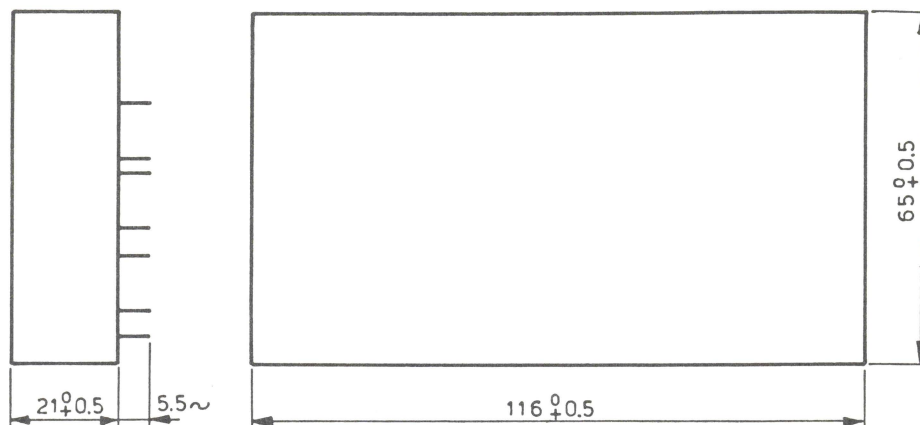


Dimensions in mm

MECHANICAL DATA

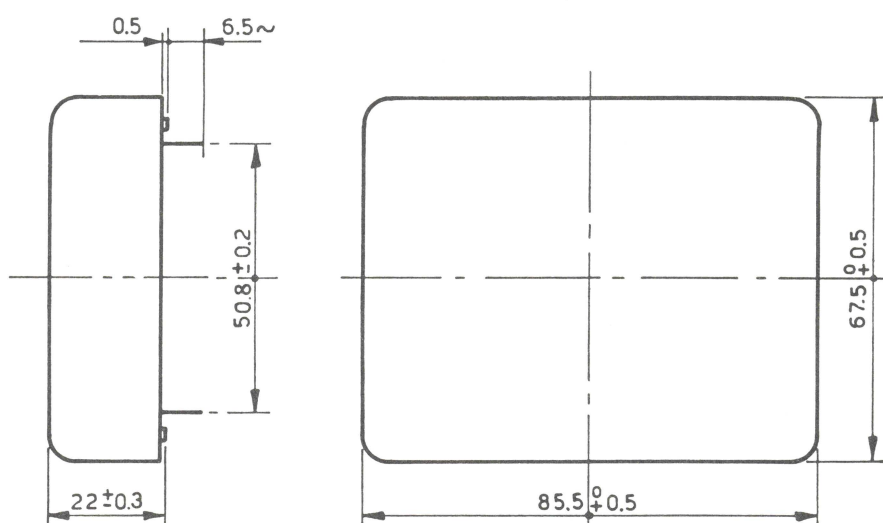
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Dimensions in mm



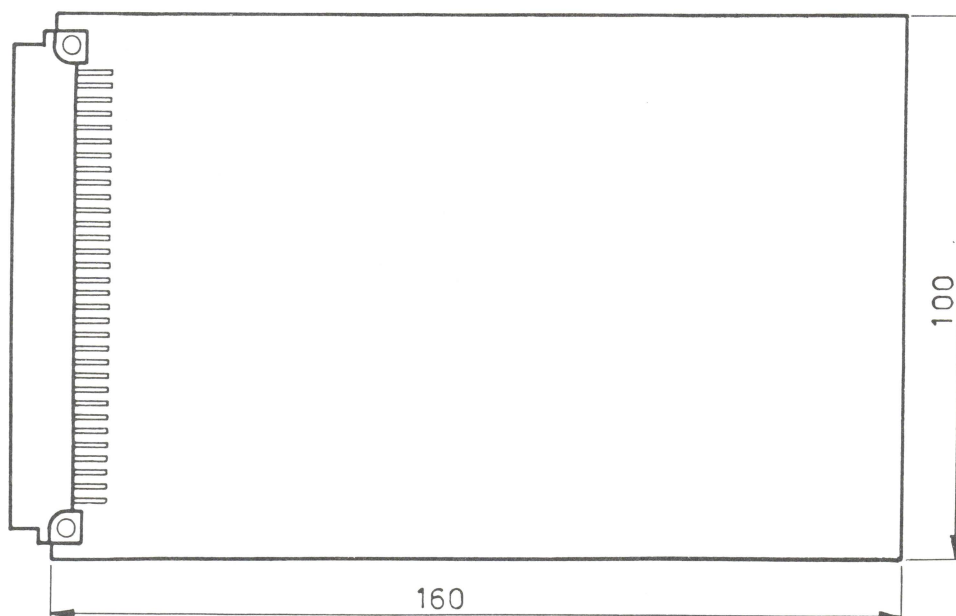
F

Dimensions in mm



G

Dimensions in mm



INTEGRATED CIRCUITS 203

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They can be offered :

- in various temperature range including – 55°C to + 125°C
- according to several quality assurance levels :
 - CECC 90000
 - MIL STD 883 class B revision C and JAN
 - ESA/SCC 9000
- in various hermetic packages and die form

DISCRETE DEVICES 211

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They can be offered :

- processed according to or qualified to CECC 50000 sequence A or B
- processed according to or qualified to ESA/SCC 5000 level B or C

LINEAR ICs

Description		Type	Detail specification	
			CECC	ESA
J-FET OP AMPs	Single	LF155 LF155A LF156 LF156A LF157 LF157A TL061 TL071 TL081	90202/005 90202/006 90202/007 90202/008 90202/009 90202/010	
	Dual	TL062 TL072 TL082	90202/035 90202/038	
	Quad	TL064 TL074 TL084	90202/035 90202/038	
BIPOLAR OP-AMPS	Single	LM101 LM101A LM101AH LM108 LM108A LM108AH UA741 UA746 UA748	90202/018 90202/015 90202/014 90201/022	9101/001 9101/006
	Dual	LM158 LM1588 MC4558	90202/031 90202/023	
	Quad	LM124 LM148	90202/029 90202/033	
COMPARATORS	Single	LM111 LM111 H	(1)	9103/002
	Dual	LM193,A	(1)	
	Quad	LM139,A	(1)	
ADJUSTABLE VOLTAGE REGULATORS	Positive	LM105 LM117 (3) LM138	90201/005	9102/002
	Negative	LM137 (3) UA723M	90201/007 90201/002	
FIXED VOLTAGE REGULATORS	Positive low drop out	TEC 7605 (2) (3)		
	Positive	UA7805 (3) UA7812 (3) UA7815 (3)	90201/011 90201/013 90201/015	
	Negative	UA7905 (3) UA7912 (3) UA7915 (3)	90201/021 90201/023 90201/017	
TIMERS		SE555 SE556		
REGULATING PULSE WIDTH MODULATOR		SG1525A (2)		
POWER CONTROLLERS		L297 (2) L6202 (2) L6203 (2)		

(1) Reference number of device type pending.

(2) To be introduced.

(3) Those products are available in TO 220 metal package.

CMOS 4000B

Type	Description	Detail specification	
		CECC	ESA/SCC
HCC4000B	Dual 3-input NOR gate plus inverter		9201/040
HCC4001B	Quad 2-input NOR gate	90 104-105	9201/041
HCC4002B	Dual 4-input NOR gate	90 104-106	9201/042
HCC4006B	18 stage static shift register	90 104-107	9306/013
HCC4007UB	Dual complementary pair plus inverter	90 104-108	9202/038
HCC4008B	4-bit full adder	90 104-109	9202/039
HCC40100B	32-stage static left/right shift register		*
HCC40101B	9-bit parity generator checker		9208/003
HCC40102B	8-stage down counter		*
HCC40103B	8-stage down counter		9204/036
HCC40104B	4-bit shift register		9306/040
HCC40105B	Fifo register		9306/033
HCC40106B	Hex schmitt trigger		9409/005
HCC40107B	Dual 2-input NAND buffer/driver		9401/013
HCC40108B	4x4 multiport register		9306/034
HCC40109B	Quad low-to-high voltage level shifter		9407/003
HCC4011B	Quad 2-input NAND gate	90 104-110	9301/043
HCC40110B	Decade up down counter/decoder/latch/driver		*
HCC4012B	Dual 4-input NAND gate	90 104-111	9201/044
HCC4013B	Dual D flip-flop	90 104-112	9203/023
HCC4014B	8-stage static sync shift register	90 104-113	9306/014
HCC4015B	Dual 4 stage static shift register	90 104-114	9306/015
HCC4016B	Quad bilateral switch	90 104-115	9202/050
HCC40160B	Programmable decade counter	90 104-189	9204/047
HCC40161B	Programmable binary counter	90 104-190	9204/054
HCC40162B	Programmable decade counter	90 104-191	*
HCC40163B	Programmable binary counter	90 104-192	*
HCC4017B	Decade counter/divider	90 104-170	9204/020
HCC40174B	Hex D type flip-flop	90 104-193	9203/038
HCC4018B	Presetable divide by N counter	90 104-171	9204/021
HCC40181B	4-bit alu		9202/063
HCC40182B	Look ahead carry generator		9202/069
HCC4019B	Quad AND/OR select gate	90 104-172	9202/051
HCC40192B	Presetable up/down BCD counter		*
HCC40193B	Presetable up/down binary counter		9204/041
HCC40194B	4-bit shift register		9306/032
HCC4020B	14-stage binary/ripple counter	90 104-116	9204/022
HCC40208B	4x4 multiport register		9301/009
HCC4021B	8-stage static shift register	90 104-117	9306/016
HCC4022B	Divide by 8 counter/divider	90 104-118	9204/023
HCC4023B	Triple 3-input NAND gate	90 104-119	9201/045
HCC4024B	7-stage binary/ripple counter	90 104-120	9204/024
HCC4025B	Triple 3-input NOR gate	90 104-121	9201/046
HCC40257B	Quad 2-line to 1 data selector/multiplexer		9408/017
HCC4026B	Decade counter/divider 7-segment display driver		9406/001
HCC4027B	Dual J-K master slave flip-flop	90 104-122	9203/022
HCC4028B	BCD to-decimal decoder	90 104-123	9205/010
HCC4029B	Presetable up/down counter	90 104-124	9204/025
HCC4030B	Quad ex-or gate	90 104-125	9201/047
HCC4031B	64-stage static shift register		9306/017
HCC4032B	Triple serial adder	90 104-126	*
HCC4033B	Decade counter/divider 7-segment display driver		*
HCC4034B	8-stage static bidirectional bus register	90 104-127	9306/025
HCC4035B	4-stage parallel I/O shift register	90 104-128	9306/018
HCC4038B	Triple serial adder	90 104-129	*
HCC4040B	12-stage binary/ripple counter	90 104-130	9204/026
HCC4041B	Quad true/complement buffer		9202/040
HCC4042B	Quad clocked D latch	90 104-185	9202/041
HCC4043B	Quad 3-state NOR R/S latch	90 104-186	9202/042
HCC4044B	Quad 3-state NAND R/S latch	90 104-132	9202/043
HCC4045B	21-stage counter		*
HCC4046B	Micropower phase locked loop	90 104-212	9202/026
HCC4047B	Monostable/astable multivibrator	90 104-225	9207/003
HCC4048B	Multifunction expandable 8-input gate		9201/054
HCC4049UB	Hex inverting buffer/converter	90 104-133	9202/045
HCC4050B	Hex non-inverting buffer/converter	90 104-134	9202/046
HCC4051B	Single 8-channel analog multiplexer/demultiplexer	90 104-135	9202/047
HCC4052B	Differential 4-channel analog multiplexer/demultiplexer	90 104-136	*

* No SCC specification yet

CMOS 4000B

Type	Description	Detail specification	
		CECC	ESA/SCC
HCC4053B	Triple 2-channel analog multiplexer/demultiplexer	90 104-137	9202/049
HCC4054B	4-segment display driver		*
HCC4055B	BCD to 7-segment decoder/driver		*
HCC4056B	BCD to 7-segment decoder/driver		*
HCC4060B	14-stage counter/divider and oscillator	90 104-213	9204/052
HCC4063B	4-bit magnitude comparator		9209/001
HCC4066B	Quad bilateral switch	90 104-138	9408/005
HCC4067B	Single 16-channel analog multiplexer/demultiplexer		9408/009
HCC4068B	8-input NAND/AND gate	90 104-139	9201/061
HCC4069UB	Hex inverter	90 104-140	9401/010
HCC4070B	Quad EX-OR gate	90 104-187	9201/048
HCC4071B	Quad 2-input OR gate	90 104-141	9201/065
HCC4072B	Dual 4-input OR gate	90 104-142	9201/082
HCC4073B	Triple 3-input AND gate	90 104-143	9201/064
HCC4075B	Triple 3-input OR gate	90 104-144	9201/065
HCC4076B	4-bit D-type register	90 104-145	9306/022
HCC4077B	Quad EX-NOR gate	90 104-146	9201/055
HCC4078B	8-input NOR/OR gate	90 104-147	9201/062
HCC4081B	Quad 2-input AND gate	90 104-148	9201/052
HCC4082B	Dual 4-input AND gate	90 104-149	9201/066
HCC4085B	Dual 2-wide 2-input AND-OR inverter gate	90 104-226	9201/067
HCC4086B	Expandable 4-wide 2-input AND-OR inverter gate		9201/068
HCC4089B	Binary rate multiplier		9202/060
HCC4093B	Quad 2-input NAND schmitt trigger	90 104-214	9408/002
HCC4094B	8-stage shift AND store bus register	90 104-188	9306/026
HCC4095B	Gated J-K master slave flip-flop		*
HCC4096B	Gated J-K master slave flip-flop		*
HCC4097B	Differential 8-channel analog multiplexer/demultiplexer		*
HCC4098B	Dual monostable multivibrator	90 104-224	9206/003
HCC4099B	8-bit addressable latch	90 104-150	9202/058
HCC4502B	Strobe hex inverter/buffer	90 104-152	9401/006
HCC4503B	Hex 3-state buffer	90 104-175	9401/030
HCC4508B	Dual 4-bit latch	90 104-155	9202/063
HCC4510B	Presetable up/down counter	90 104-156	9204/053
HCC4511B	BCD to 7-segment latch/decoder/driver	90 104-157	*
HCC4512B	B-channel data selector	90 104-158	9408/006
HCC4514B	4-bit latch/4 to 16 line decoder	90 104-159	9408/012
HCC4515B	4-bit latch/4 to 16 line decoder	90 104-160	9205/011
HCC4516B	Presetable up/down counter	90 104-161	9204/045
HCC4517B	Dual 64-stage static shift register	90 104-162	
HCC4518B	Dual BCD up-counter	90 104-163	9204/013
HCC4520B	Dual binary up-counter	90 104-165	9204/028
HCC4527B	BCD rate multiplier	90 104-168	9408/026
HCC4532B	8-bit priority encoder	90 104-178	9402/013
HCC4536B	Programmable timer	90 104-218	
HCC4538B	Dual monostable multivibrator	90 104-179	
HCC4555B	Dual binary to 1 of 4 decoder/demultiplexer	90 104-199	9408/011
HCC4556B	Dual binary to 1 of 4 decoder/demultiplexer	90 104-181	9408/025
HCC4585B	4-bit magnitude comparator	90 104-203	*

* No SCC specification yet

LOW POWER SCHOTTKY

Type	Description	CECC Spec. N BS UTE
T54LS00	A Quad 2-input NAND gate	90103 - 001/183
T54LS02	A Quad 2-input NOR gate	90103 - 003/188
T54LS03	B Quad 2-input NAND gate (open collector)	90103 - 004/186
T54LS04	A Hex inverter	90103 - 005/183
T54LS05	A Hex inverter (open collector)	90103 - 006/186
T54LS08	A Quad 2-input AND gate	90103 - 007/226
T54LS09	A Quad 2-input AND gate (open collector)	90103 - 008/227
T54LS10	A Triple 3-input NAND gate	90103 - 009/183
T54LS11	A Triple 3-input AND gate	90103 - 010/226
T54LS125A	A Quad 3-state buffer (low enable)	90103 - 053/201
T54LS136	A Quad 2-input exclusive OR gate (open collector)	90103 - 056/265
T54LS138	A 1 of 8 decoder / demultiplexer	90103 - 057/209
T54LS139	A Dual 1 of 4 decoder / demultiplexer	90103 - 058/309
T54LS14	A Hex schmitt trigger inverter	90103 - 013/225
T54LS15	A Triple 3-input AND gate (open collector)	90103 - 014/227
T54LS151	A B input multiplexer	90103 - 062/193
T54LS153	A Dual 1 input multiplexer	90103 - 063/194
T54LS155	A Dual 1 of 4 decoder / demultiplexer	90103 - 136/197
T54LS156	A Dual 1 of 4 decoder / demultiplexer (open collector)	90103 - 064/273
T54LS157	A Quad 2-input multiplexer (non inverting)	90103 - 065/195
T54LS158	A Quad 2-input multiplexer (inverting)	90103 - 066/231
T54LS164	A 8-bit shift register (serial in parallel out)	90103 - 071/207
T54LS170	A 4 x 4 register file (open collector)	90103 - 075/261
T54LS174	A Hex D-type flip-flop with clear	90103 - 077/202
T54LS175	A Quad D-type flip-flop with clear	90103 - 138/205
T54LS192	A Presettable BCD / decade up / down counter	90103 - 081/245
T54LS193	A Presettable 4-bit binary up / down counter	90103 - 083/214
T54LS194A	A 4-bit right/left shift register	90103 - 033/206
T54LS195A	A 4-bit shift register	90103 - 084/232
T54LS20	A Dual 4-input NAND gate	90103 - 015/183
T54LS21	A Dual 4-input AND gate	90103 - 016/226
T54LS22	A Dual 4-input NAND gate (open collector)	90103 - 017/186
T54LS240	A Octal inverting bus / line driver (3-state)	90103 - 087/217
T54LS241	A Octal bus line driver (3-state)	90103 - 088/276
T54LS258A	A Quad 2-input multiplexer (3-state)	90103 - 099/257
T54LS259	A 8-bit addressable latch	90103 - 100/203
T54LS266	A Quad 2-input exclusive NOR gate (open collector)	90103 - 182/291
T54LS27	A Triple 3-input NOR gate	90103 - 019/188
T54LS273	A Octal D-type flip-flop with master reset	90103 - 102/249
T54LS279	A Quad set-reset latch	90103 - 104/238
T54LS28	A Quad 2-input NOR buffer	90103 - 020/218
T54LS280	A 9-bit odd / even parity generator / checked	90103 - 105/221
T54LS283	A 4-bit binary full adder (rotated LS83A)	90103 - 106/204
T54LS293	A 4-bit binary counter	90103 - 108/242
T54LS298	A Quad 2-input multiplexer with output latches	90103 - 109/239
T54LS30	A 8-input NAND gate	90103 - 021/184
T54LS32	A Quad 2-input OR gate	90103 - 022/208
T54LS33	A Quad 2-input NOR buffer (open collector)	90103 - 023/236
T54LS352	A Dual 4-input multiplexer (inverting LS153)	90103 - 118/301
T54LS353	A Dual 4-input multiplexer (3-state LS352)	90103 - 119/302
T54LS365A	A Hex buffer with common enable (3-state)	90103 - 143/272
T54LS366A	A Hex inverter buffer with common enable (3-state)	90103 - 120/262
T54LS367A	A Hex buffer 4-bit and 2-bit (3-state)	90103 - 121/235
T54LS368A	A Hex inverter buffer 4-bit and 2-bit (3-state)	90103 - 144/240
T54LS37	A Quad 2-input NAND buffer	90103 - 024/185
T54LS374	A Octal D-type flip-flop (3-state)	90103 - 123/224
T54LS377	A Octal D-type flip-flop with common enable	90103 - 124/292
T54LS378	A Hex D type flip-flop with enable	90103 - 125/293
T54LS379	A 4-bit D-type flip-flop with enable	90103 - 126/294
T54LS38	A Quad 2-input NAND buffer (open collector)	90103 - 025/187
T54LS393	A Dual 4-bit binary counter	90103 - 129/264
T54LS395A	A 4-bit shift register (3-state)	90103 - 172/246
T54LS40	A Dual 4-input NAND buffer	90103 - 026/185
T54LS42	A 1 of 10 decoder	90103 - 027/198
T54LS54	A 2-3-3-2-input AND-OR-INVERT gate	90103 - 031/189
T54LS541	A Octal buffer / line driver (3-state)	90103 - 147/300
T54LS55	A 2-wide 4-input AND-OR-INVERT gate	90103 - 032/229
T54LS670	A 4 x 4 register file (3-state)	90103 - 174/192
T54LS74A	A Dual D-type posit. edge trigg. flip-flop	90103 - 034/196
T54LS83A	A 4-bit full adder with fast carry	90103 - 038/204
T54LS93	A 4-bit binary counter	90103 - 044/242

A = CECC Approved.

B = Screened according to CECC specifications.

HS - C2MOS LOGIC

Type	Description	Detail specification CECC
M54HCT04	Hex inverter	90109 - 706
M54HCT137	3 to 8 line decoder latch (inv.)	
M54HCT138	3 to 8 line decoder (inv.)	90109 - 777
M54HCT240	Octal buffer (3-state inv.)	90109 - 688
M54HCT241	Octal bus buffer (3-state)	90109 - 689
M54HCT244	Octal buffer (3-state)	90109 - 690
M54HCT245	Octal bus transceiver (3-state)	90109 - 691
M54HCT373	Octal D-type latch (3-state)	90109 - 695
M54HCT374	Octal D-type flip-flop (3-state)	90109 - 704
M54HCT540	Octal bus buffer (3-state/inv.)	90109 - 759
M54HCT541	Octal bus buffer (3-state/inv.)	90109 - 760
M54HCT563	Octal D-latch (3-state/inv.)	90109 - 863
M54HCT564	Octal D-flip-flop (3-state/inv.)	90109 - 864
M54HCT573	Octal D-latch (3-state)	90109 - 865
M54HCT574	Octal D-flip-flop (3-state)	90109 - 866
M54HCT640	Octal bus transceiver (3-state/inv.)	90109 - 692
M54HCT643	Octal bus transceiver (3-state)	90109 - 693
M54HCT646	Octal bus transceiver (3-state)	90109 - 889
M54HCT648	Octal bus transceiver (3-state/inv.)	90109 - 890
M54HCT651	Octal bus transceiver (3-state/inv.)	90109 - 883
M54HCT652	Octal bus transceiver (3-state)	90109 - 884
M54HCT7007	Hex buffer	90109 - 733
M54HCU04	Hex inverter (single stage)	90109 - 736
M54HC00	Quad 2-input NAND gate	90109 - 601
M54HC02	Quad 2-input NOR gate	90109 - 617
M54HC03	Quad 2 NAND (open drain)	90109 - 654
M54HC04	Hex inverter	90109 - 633
M54HC08	Quad 2-input AND gate	90109 - 605
M54HC10	Triple 3-input NAND gate	90109 - 602
M54HC107	Dual J-K flip-flop	90109 - 637
M54HC109	Dual J-K flip-flop with preset and clear	90109 - 627
M54HC11	Triple 3-input AND gate	90109 - 622
M54HC112	Dual J-K flip-flop with preset and clear	90109 - 638
M54HC113	Dual J-K flip-flop	90109 - 639
M54HC123	Dual monostable multivibrator with clear	90109 - 699
M54HC125	Quad bus buffer (3-state)	90109 - 665
M54HC126	Quad bus buffer (3-state)	90109 - 666
M54HC131	3 to 8 line decoder latch	90109 - 731
M54HC132	Quad 2-input schmitt NAND	90109 - 623
M54HC133	13-input NAND gate	90109 - 661
M54HC137	3 to 8 line decoder latch (inv.)	90109 - 680
M54HC138	3 to 8 line decoder (inv.)	90109 - 608
M54HC139	Quad 2 to 4 line decoder/demultiplexer	90109 - 681
M54HC14	Hex schmitt inverter	90109 - 640
M54HC147	10 to 4 line priority encoder	90109 - 650
M54HC148	8 to 3 line priority encoder	90109 - 651
M54HC151	8-channel multiplexer 16	90109 - 641
M54HC153	Dual 4-channel multiplexer	90109 - 642
M54HC154	4 to 6 decoder/demultiplexer	90109 - 667
M54HC155	Dual 2 to 4 line decoder	90109 - 804
M54HC157	Quad 2-channel multiplexer	90109 - 643
M54HC158	Quad 2-channel multiplexer (inv.)	90109 - 644
M54HC160	Sync decade counter with async clear	90109 - 630
M54HC161	Sync binary counter with async clear	90109 - 631
M54HC162	Sync decade counter with sync clear	90109 - 645
M54HC163	Sync binary counter with sync clear	90109 - 646
M54HC164	8-bit SIPO shift register	90109 - 621
M54HC165	8-bit PISO shift register	90109 - 682
M54HC166	8-bit PISO shift register	90109 - 799
M54HC173	Quad D-type register (3-state)	90109 - 711
M54HC174	Hex D-type flip-flop with clear	90109 - 609
M54HC175	Quad D-type flip-flop with clear	90109 - 624
M54HC181	Arithmetic logic unit	90109 - 832
M54HC182	Look ahead carry generator	90109 - 833
M54HC190	BCD sync up/down counter	90109 - 752
M54HC191	4-bit sync binary up/down counter	90109 - 727
M54HC192	Sync. up/down decade counter	90109 - 728
M54HC193	Sync. up/down binary counter	90109 - 729
M54HC194	4-bit PIPO shift register	90109 - 615
M54HC195	4-bit PIPO shift register	90109 - 632
M54HC20	Dual 4-input NAND gate	90109 - 603
M54HC21	Dual 4-input AND gate	90109 - 658
M54HC221	Dual monostable multivibrator	90109 - 700
M54HC237	3 to 8 line decoder latch	90109 - 738
M54HC238	3 to 8 line decoder	90109 - 735
M54HC240	Octal bus buffer (3-state/inv.)	90109 - 616

HS - C²MOS LOGIC

Type	Description	Detail specification CECC
M54HC241	Octal bus buffer (3-state)	90109 - 647
M54HC242	Quad bus transceiver (3-state/inv.)	90109 - 648
M54HC243	Quad bus transceiver (3-state)	90109 - 649
M54HC244	Octal bus buffer (3-state)	90109 - 610
M54HC245	Octal bus transceiver (3-state)	90109 - 611
M54HC251	8-channel multiplexer (3-state)	90109 - 683
M54HC253	Dual 4-channel multiplexer (3-state)	90109 - 724
M54HC257	Quad 2-channel multiplexer	90109 - 628
M54HC258	Quad 2-channel multiplexer	90109 - 754
M54HC259	8-bit addressable latch	90109 - 684
M54HC27	Triple 3-input NOR gate	90109 - 618
M54HC273	Octal D-type flip-flop with clear	90109 - 625
M54HC279	Quad S-R latch	90109 - 878
M54HC280	9-bit parity generator	90109 - 612
M54HC283	4-bit binary full generator	90109 - 807
M54HC292	Programmable divider/timer	90109 - 852
M54HC294	Programmable divider/timer	90109 - 853
M54HC298	Quad 2-channel multiplexer register	90109 - 714
M54HC299	8-bit PIPO shift register (3-state)	90109 - 801
M54HC30	8-input NAND gate	90109 - 604
M54HC32	Quad 2-input OR gate	90109 - 619
M54HC323	8-bit PIPO shift register (3-state)	90109 - 879
M54HC354	8-channel multiplexer/register (3-state)	90109 - 712
M54HC356	8-channel multiplexer/register (3-state)	90109 - 713
M54HC365	Hex bus buffer	90109 - 668
M54HC366	Hex bus buffer (inv.)	90109 - 669
M54HC367	Hex bus buffer (3-state)	90109 - 670
M54HC368	Hex bus buffer (3-state/inv.)	90109 - 671
M54HC373	Octal D-type latch (3-state)	90109 - 626
M54HC374	Octal D-type flip-flop (3-state)	90109 - 613
M54HC375	Quad D-type latch	90109 - 880
M54HC377	Octal D-type flip-flop	90109 - 685
M54HC386	Quad exclusive OR gate	90109 - 717
M54HC390	Dual decade counter	90109 - 730
M54HC393	Dual binary counter	90109 - 686
M54HC4002	Dual 4-input NOR gate	90109 - 662
M54HC40102	Dual BCD programmed down counter	90109 - 885
M54HC40103	8-bit binary programmed down counter	90109 - 886
M54HC4017	Decade counter/divider	90109 - 634
M54HC4020	14-stage binary counter	90109 - 629
M54HC4022	Octal counter/divider	90109 - 800
M54HC4024	7-stage binary counter	90109 - 655
M54HC4028	BCD to decimal decoder	90109 - 834
M54HC4040	12-stage binary counter	90109 - 656
M54HC4049B	Hex buffer/converter (inv.)	90109 - 718
M54HC4050B	Hex buffer/converter	90109 - 719
M54HC4051	8-channel analog multiplexer	
M54HC4052	Dual 4-channel analog multiplexer	
M54HC4053	Triple 2-channel analog multiplexer	
M54HC4060	14-stage binary counter/osc.	90109 - 657
M54HC4066	Quad bilateral switch	
M54HC4072	Dual 4-input OR gate	90109 - 835
M54HC4075	Triple 3-input OR gate	90109 - 663
M54HC4078	8-input NOR/OR gate	90109 - 664
M54HC4094	8-bit SIPO shift register latch (3-state)	90109 - 855
M54HC42	BCD to decimal decoder	90109 - 672
M54HC423	Dual monostable multivibrator with clear	90109 - 701
M54HC4511	BCD to 7-segment L/D/D (LED)	90109 - 755
M54HC4514	4 to 16 line decoder latch	90109 - 721
M54HC4515	4 to 16 line decoder latch (inv.)	90109 - 722
M54HC4518	Dual decade counter	90109 - 815
M54HC4520	Dual 4-bit binary counter	90109 - 816
M54HC4538	Dual monostable multivibrator	90109 - 756
M54HC4543	BCD to 7-segment L/D/D (LCD)	90109 - 720
M54HC51	Dual 2W 21 AND/OR inverter gate	90109 - 660
M54HC533	Octal D-type latch (3-state/inv.)	90109 - 675
M54HC534	Octal D-type flip-flop (3-state/inv.)	90109 - 614
M54HC540	Octal bus buffer (3-state/inv.)	90109 - 757
M54HC541	Octal bus buffer (3-state)	90109 - 758
M54HC563	Octal D-type latch (3-state/inv.)	90109 - 673
M54HC564	Octal D-type flip-flop (3-state/inv.)	90109 - 725
M54HC573	Octal D-type latch (3-state)	90109 - 674
M54HC574	Octal D-type flip-flop (3-state)	90109 - 726
M54HC590	8-bit binary counter register (3-state)	90109 - 854
M54HC592	8-bit register binary counter	
M54HC593	8-bit register binary counter (3-state)	

HS - C²MOS LOGIC

Type	Description	Detail specification CECC
M54HC595	8-bit shift register latch (3-state)	90109 - 802
M54HC597	8-bit latch shift register	90109 - 803
M54HC620	Octal bus transceiver (3-state/inv.)	90109 - 746
M54HC623	Octal bus transceiver (3-state)	90109 - 747
M54HC640	Octal bus transceiver (3-state/inv.)	90109 - 652
M54HC643	Octal bus transceiver (3-state)	90109 - 653
M54HC646	Octal bus transceiver (3-state)	90109 - 702
M54HC648	Octal bus transceiver (3-state/inv.)	90109 - 703
M54HC651	Octal bus transceiver (3-state/inv.)	90109 - 881
M54HC652	Octal bus transceiver (3-state)	90109 - 882
M54HC670	4 word × 4 bit file (3-state)	90109 - 737
M54HC688	8-bit equality comparator	90109 - 687
M54HC690	Decade counter (3-state)	90109 - 836
M54HC691	4-bit binary counter (3-state)	90109 - 837
M54HC692	Decade counter (3-state)	90109 - 808
M54HC693	4-bit binary counter (3-state)	90109 - 809
M54HC696	U/D decade counter (3-state)	90109 - 848
M54HC697	U/D 4 bit binary counter (3-state)	90109 - 849
M54HC698	U/D decade counter (3-state)	
M54HC699	U/D 4-bit binary counter (3-state)	
M54HC7266	Quad exclusive NOR gate	90109 - 723
M54HC7292	Programmable divider/timer	90109 - 838
M54HC7294	Programmable divider/timer	90109 - 839
M54HC73	Dual J-K flip-flop with clear	90109 - 635
M54HC74	Dual D-type flip-flop with preset and clear	90109 - 606
M54HC75	4-bit D-type latch	90109 - 678
M54HC76	Dual J-K flip-flop with preset and clear	90109 - 636
M54HC77	Quad D-type latch	90109 - 806
M54HC85	8-bit magnitude comparator	90109 - 607
M54HC86	Quad exclusive OR gate	90109 - 620

MEMORIES

Type	Description	Detail JAN specification
ET 2716	2K × 8, NMOS EPROM	
ETC 2716	2K × 8, CMOS EPROM	
ETC 2732	4K × 8, CMOS EPROM	
MKB45H64	64K × 1, DRAM	MIL-M38510/244
MKB/J4501	512 × 9, FIFO	MIL-M38510/250
MKJ45H64	64 × 1, DRAM	MIL-M38510/244
TS 27C64	8K × 8, CMOS EPROM	
TS 27C256	32K × 8, CMOS EPROM	

MICROPROCESSORS AND PERIPHERALS

Type	Description
EF4442	RTA ARINC
EF68HC05E2	8-bit CMOS
EF6800 - EF6802 - EF6803 - EF6809 - EF6809E - EF6810 - EF6821 - EF6840 - EF6850 - EF6852 - EF6854	8-bit NMOS
TS2901B/C - TS2902A - TS2909A - TS2910 - TS2911A - TS2914 - TS2915A - TS2917A - TS2918 - TS2919	4-bit slices
TS68000 (CECC detail specification : 90110/001 - DESC drawing 82021)	16-bit HMOS
TS68008 - TS68230 - TS68483 - TS68564 - TS68901	16-bit HMOS
TS68HC901	16-bit CMOS
TS68931	DSP
Z8001 - Z8001A - Z8001B - Z8002 - Z8002A - Z8002B - Z8010 - Z8010A - Z8010B	16-bit NMOS
Z8030 - Z8030A - Z8036 - Z8036A - Z8038 - Z8038A - Z8060 - Z8530 - Z8530A	16-bit NMOS
Z8536 - Z8536A	16-bit NMOS
Z8400 - Z8400A - Z8410 - Z8410A - Z8420 - Z8420A - Z8430 - Z8430A - Z8440 - Z8440A - Z8441 - Z8441A	8-bit NMOS
Z8442 - Z8442A - Z8444 - Z8444A	8-bit NMOS

ASIC's

BIPOLAR LINEAR AND MIXED ANALOGUE DIGITAL «POLYUSE» ARRAYS

Type	Description
TSFK series (1) TSFL series (2) TSFJ series (1)	900 components - $F_T = 3$ GHz 600, 1200, 1900 components - $F_T = 3$ GHz 300 to 2300 components digital and linear

HCMOS MIXED ANALOGUE DIGITAL STANDARD CELLS

Type	Description
TSGSM series (1)	3.5 μ - 2 POLY - 1 metal layer digital standard cell + analogue cell library

«GATE ARRAY» FILTERS

Type	Description
TSGF series (1)	3.5 μ - 2 POLY - 1 metal layer 4th, 8th 12th order filter

HCMOS GATE ARRAYS

Type	Description
HSG3000 series (3) TSGB series (2) HSG7000 series (3) TSGC series (2)	HCMOS - 3.5 μ - 1 metal layer - 300 to 2500 gates HCMOS - 2 μ - 2 metal layers - 1000 to 10000 gates HCMOS - 2 μ - 2 metal layers - 900 to 10000 gates HCMOS - 2 μ (1.2 μ gate shrink) - 2 metal layers - 1000 to 10000 gates

HCMOS SEA OF GATES

Type	Description
ISB 9000 series (3) ISB 12000 series (3)	HCMOS - 1.5 μ - 2 metal layers - 3500 to 21000 gates - 24 mA output drive HCMOS - 1.2 μ - 2 metal layers - 8000 to 128000 gates

HCMOS DIGITAL LIBRARY

Type	Description
CB200 series (3) CB300 series (3) TSBC3 series (2)	HCMOS - 1.5 μ - Standard cells and macrocells HCMOS - 1.5 μ - Standard cells and macrocells HCMOS - 1.2 μ - Compiled function library (RAM, ROM, FIFO, PLA, MULTIPLIER, ALU, DATA PATH generators)

ECL GATE ARRAYS

Type	Description
TSFD series (2)	Bipolar 1.2 μ - 3 metal layers - 3500 gates - toggle frequency 800 MHz

(1) SGS-THOMSON Microelectronics Products (2) TMS Products (3) IST Products

These military and space product ranges manufactured by SGS-THOMSON Microelectronics, THOMSON COMPOSANTS MILITAIRES ET SPATIAUX and Innovative Silicon Technology «IST» are commercialized by SGS-THOMSON Microelectronics.

BIPOLAR POWER TRANSISTORS

Type	Processed according to CECC 50000	Detail specification ESA
BDX18	X	
BDX85B	X	
BDX86B	X	
BFX34	X	5201-005
BFX40	X	
BSS44	X	
BUR10		5203-015
BUR14		5203-030
BUR15		5204-013
BUR50	X	
BUV18	X	
BUV41	X	
BUV42	X	
BUV42A	X	
BUV51	X	
BUV52	X	
BUV60	X	
BUV62	X	
BUX10	X	
BUX11	X	
BUX12	X	
BUX20	X	
BUX21	X	
BUX22	X	
BUX23	X	
BUX24	X	
BUX40	X	
BUX41	X	
BUX42	X	
BUX44	X	
BUX47	X	
BUX48	X	
BUX49	X	
BUX51	X	
BUX77	X	
BUX78	X	
BUX98	X	
BUX98A	X	
BUY47	X	
BUY48	X	
2N3055	X	
2N3439	X	5203-011
2N3440	X	5203-011
2N3792	X	
2N5004		5203-013
2N5005		5204-005
2N5038	X	5203-009
2N5153	X	5204-002
2N5154	X	5203-010
2N5415	X	
2N5416	X	
2N5428		5203-018
2N5672		5203-004
2N6032		5203-021
2N6033		5203-026

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RF & MICROWAVE TRANSISTORS

We have a range of RF & Microwave Transistors to cover a wide variety of applications demanded by the telecommunication as well as military markets.
For more details see chapter «TELECOM AND DATA COMMUNICATIONS».

SMALL SIGNAL TRANSISTORS

Type	Detail specification CECC 50000	Detail specification ESA
BCY59 - VIII	50002-031	
BCY59 - IX	50002-031	
BSX46 - 10	50002-174	
CV9507	50004-050	
CV9543	50004-067	
CV9936	50004-099	
P039	50002-170	
2N1613	50002-104	
2N1711	50002-104	
2N1893	50002-104	
2N2218/2N2218A	50002-100	
2N2219	50002-100	
2N2219A	50002-100	5207-003
2N2221/2221A	50002-101	
2N2222	50002-101	
2N2222A	50002-101	5201-002
2N2368	50004-022/023	
2N2369	50004-022/023	
2N2369A	50004-022/023	5201-006
2N2484	50002-129	5201-001
2N2857		5201-014
2N2894	50004-022/023	5202-004
2N2904/2904A	50002-102	
2N2905	50002-102	
2N2905A	50002-102	5202-002
2N2906/2906A	50002-103	
2N2907	50002-103	
2N2907A	50002-103	5202-001
2N2920A		5207-002
2N3700		5201-004
2N3810		5207-005
2N918		5201-009

SMALL SIGNAL SCHOTTKY DIODES

Type	Processed according to CECC 50000	Processed according to ESA
BAR10	X	
BAT19	X	
BAT41	X	
BAT42	X	
BAT45	X	
BAT46	X	
BAT48	X	
BYV10-20	X	
BYV10-30 (1N5818)	X	
BYV10-40 (1N5819)	X	
1N6263	X	

ZENER DIODES

ZENER DIODES

Type	Processed according to CECC 50000	Detail specification ESA
BZX55C2V7 to BZX55C62	X	5102/002
BZX85C2V7 to BZX85C62	X	Processed according to ESA
1N3020B to 1N3039B	X	
1N4728A to 1N4759A	X	
1N5223B to 1N5265B	X	

TEMPERATURE COMPENSATED ZENER DIODES

Type	Processed according to CECC 50000	Processed according to ESA
1N3154 to 1N3157	X	
1N4565A to 1N4569A	X	X
1N4575 to 1N4579	X	X
1N821A to 1N829A	X	X
1N935A to 1N939A	X	

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type	Processed according to CECC 50000	Processed according to ESA
1N5635A to 1N5665A	X	X
1N6041A to 1N6072A	X	

RECTIFIER DIODES

STANDARD RECTIFIER DIODES

Type	Processed according to CECC 50000	Processed according to ESA
BYW88-100R	X	
BYW88-200	X	
BYW88-300R	X	
BYW88-400	X	
1N1184	X	
1N1186	X	
1N1187	X	
1N1190	X	
1N1196A	X	

FAST RECOVERY RECTIFIER DIODES

Type	Processed according to CECC 50000	Processed according to ESA
BYX61-100	X	
BYX61-200	X	
BYX61-400 (R)	X	
BYX62-600 (R)	X	
BYX63-600 (R)	X	
BYX65-200 (R)	X	
BYX65-400	X	
ESM243-400	X	
ESM244-600R	X	
1N3880	X	
1N3881	X	
1N3883 (R)	X	
1N3890	X	
1N3891 (R)	X	
1N3903	X	

HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

Type	Processed according to CECC 50000	Processed according to ESA
BYW77-150(R)	X	
BYW77-200(R)	X	
BYW78-150	X	
BYW78-200(R)	X	
BYW81-100	X	
BYW81-150	X	
BYW81-200	X	
BYW92-150	X	
BYW92-200	X	

TO 220 METAL DOUBLE RECTIFIER DIODES

Type	Description
BYW51-200A BYT16P-400 (1)	2 × 10 A - 200 V - $t_{rr} = 35$ ns 2 × 8 A - 400 V - $t_{rr} = 35$ ns
(1) To be introduced.	

COMPONENTS FOR SMART CARDS & SURFACE MOUNT DEVICES

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CHIP CARRYING CARDS

Type	Description	Pins
IC2FC01025625	256 K OTP CMOS EPROM	45
TS1200	256 bit one time program EPROM	7
TS1300	1 Kbit CMOS EEPROM, 5 V program voltage	6
TS1301	Secured 416-bit EEPROM	8
TS1821	Secured 8-bit CPU, 1K byte EPROM	6
TS1834	Secured 8-bit CPU, 4K byte EPROM	6

TELECOM AND DATA COMMUNICATIONS

INTEGRATED CIRCUITS

Type	Description	Package
ETC5040FN	PCM filter	PLCC20
ETC5054FN	Mu-law serial output COMBO	PLCC20
ETC5057FN	A-law serial output COMBO	PLCC20
ETC5064FN	Mu-law serial COMBO with power amplifiers	PLCC20
ETC5067FN	A-law serial COMBO with power amplifiers	PLCC20
L3030	SLIC control unit	PLCC44
LS1240	Two tone ringer	SO8
LS1240A	Two tone ringer	SO8
LS1241	Two tone ringer	SO8
LS156	Speech circuit with MF interface (for piezoceramic transducers)	SO20L
LS204CM,M	High performance dual operational amplifier	SO8
LS404CM,M	High performance quad operational amplifier	SO14
LS656	Low drop speech circuit with MF interface (for dynamic transducers)	SO20L
MK5025	X.25 LAPB / ISDN LAPD / HDLC CMOS Hi-speed link level controller with DMA	PLCC52
TEA7531FP	Monitor amplifier with anti-howling (telephone set)	SO16
TEA7532FP	Monitor amplifier with anti-howling (telephone set)	SO16
TEB1033D	High performance dual bipolar operational amplifier	SO8
TEB1033DT	High performance dual bipolar operational amplifier	SO8 tape
TEB4033D	High performance quad bipolar operational amplifier	SO14
TEB4033DT	High performance quad bipolar operational amplifier	SO14 tape
TS5070FN	Universal programmable COMBO II	PLCC28
TS7514CFN	Monochip FSK modem, V.23, DTMF	PLCC28
TS7542CFN	Monochip analog front end	PLCC44

NPN HIGH FREQUENCY TRANSISTORS - SOT 23

Type	V _{CBO}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE (sat)} @ I _C / I _B			f _T typ min *	Marking	
	(V)	(V)	(mA)	(mW)	min/max	(mA)	(V)	min (mV)	(mA)	(mA)	(MHz)	Standard	Reverse
BFR 92	20	15	25	250	25/---	14	10	—	—	—	5000	P1	P4
BFR 92A	20	15	25	250	40/---	14	10	—	—	—	5000	P2	P5
BFR 93	15	12	35	250	25/—	30	5	—	—	—	5000	R1	R4
BFR 93A	15	12	35	250	40/—	30	5	—	—	—	5000	R2	R5
BFS 17	25	15	25	250	20/---	25	1	—	—	—	1300 *	E1	E4
BFS 18	30	20	30	250	35/125	1	10	—	—	—	250	F1	F4
BFS 19	30	20	30	250	65/225	1	10	—	—	—	300	F2	F5
BFS 20	30	20	25	250	40/---	7	10	—	—	—	550	G1	G4
SO 918	30	15	50	250	20/---	3	1	400	10	1	600 *	N10	O10

DATA PROCESSING

MEMORIES

Type	Description	Package
ST27C256-20FN	32 K × 8, 200 ns access time, consumption 30/1 mA/100 μA, CMOS OTP ROM	PLCC32
ST27C256-25FN	32 K × 8, 250 ns access time, consumption 30/1 mA/100 μA, CMOS OTP ROM	PLCC32
TS27C64A-20FN	8 K × 8, 200 ns access time, consumption 30/1 mA/100 μA, CMOS OTP ROM	PLCC32
TS27C64A-25FN	8 K × 8, 250 ns access time, consumption 30/1 mA/100 μA, CMOS OTP ROM	PLCC32
M9306	16 × 16, clock frequency 250 kHz, NMOS EEPROM	SO8
M9346	64 × 16, clock frequency 250 kHz, NMOS EEPROM	SO14

DATA PROCESSING

MEMORIES

Type	Description	Package
ST24C02	256 × 8, clock frequency 100 KHz, I2C compatible, CMOS EEPROM	SO8
MK48C02A-15 MK48C02A-20 MK48C02A-25	2K × 8, 150 ns access time, battery back-up SRAM 2K × 8, 200 ns access time, battery back-up SRAM 2K × 8, 250 ns access time, battery back-up SRAM	PLCC32 PLCC32 PLCC32
MK4501-65 MK4501-80 MK4501-10 MK4501-12 MK4501-15 MK4501-20	512 × 9, 65 ns access time, BIPO TM FIFO 512 × 9, 80 ns access time, BIPO TM FIFO 512 × 9, 100 ns access time, BIPO TM FIFO 512 × 9, 120 ns access time, BIPO TM FIFO 512 × 9, 150 ns access time, BIPO TM FIFO 512 × 9, 200 ns access time, BIPO TM FIFO	PLCC32 PLCC32 PLCC32 PLCC32 PLCC32 PLCC32

MICROS & PERIPHERALS

4-BIT MCU - 9400 FAMILY

Type	Description	Package
ET9420 ET9421 ET9422 ETC9410 ETC9411 ETC9413 ETC9420 ETC9421 ETC9422 ETC9444 ETC9445 ETL9410 ETL9411 ETL9413 ETL9420 ETL9421 ETL9422 ETL9444 ETL9445	NMOS, 1K ROM, 15-23 I/O NMOS, 1K ROM, 15-23 I/O NMOS, 1K ROM, 15-23 I/O CMOS, 1/2K ROM, 15-19 I/O CMOS, 1/2K ROM, 15-19 I/O CMOS, 1/2K ROM, 15-19 I/O CMOS, 1K ROM, 15-23 I/O CMOS, 1K ROM, 15-23 I/O CMOS, 1K ROM, 15-23 I/O CMOS, 2K ROM, 19-23 I/O CMOS, 2K ROM, 19-23 I/O NMOS low power, 1/2K ROM, 15-19 I/O NMOS low power, 1/2K ROM, 15-19 I/O NMOS low power, 1/2K ROM, 15-19 I/O NMOS low power, 1K ROM, 15-23 I/O NMOS low power, 1K ROM, 15-23 I/O NMOS low power, 1K ROM, 15-23 I/O NMOS low power, 2K ROM, 19-23 I/O NMOS low power, 2K ROM, 19-23 I/O	SO28, PLCC28 SO24 SO20 SO24 SO20 SO20 SO28, PLCC28 SO24 SO20 SO28, PLCC28 SO24 SO20 SO20 SO28, PLCC28 SO24 SO20 SO28, PLCC28 SO24 SO20 SO28, PLCC28 SO24

8-BIT MCU - 6804 FAMILY

Type	Description	Package
EF68HC04P3FN EF6804J2FP EF6804P2FN	HCMOS, 2K ROM, 20 I/O, 8-bit timer HMOS, 1K ROM, 12 I/O, 8-bit timer HMOS, 1K ROM, 20 I/O, 8-bit timer	PLCC28 SO20 PLCC28

8-BIT MCU - 6805 FAMILY

Type	Description	Package
EF6805P2FN EF6805P6FN EF6805R2FN EF6805R3FN EF6805U2FN EF6805U3FN	HMOS, 1K ROM, 20 I/O, 8-bit timer HMOS, 1.8K ROM, 20 I/O, 8-bit timer HMOS, 2K ROM, 32 I/O, A/D converter HMOS, 3.7K ROM, 32 I/O, A/D converter HMOS, 2K ROM, 32 I/O HMOS, 3.7K ROM, 32 I/O	PLCC28 PLCC28 PLCC44 PLCC44 PLCC44 PLCC44

DATA PROCESSING

MICROS & PERIPHERALS

8-BIT MCU - 3870 FAMILY

Type	Description	Package
M38AD72C M38AD74C M38SH74C M3870C M3874C M3876C M3878C	NMOS, 2K ROM MCU, A/D converter, 25 I/O lines NMOS, 4K ROM MCU, A/D converter, 25 I/O lines NMOS, 4K ROM MCU, 64 bytes N.V. shadow RAM, 31 I/O lines NMOS, 2K ROM MCU, 32 I/O lines NMOS, 4K ROM MCU, 32 I/O lines NMOS, 6K ROM MCU, 32 I/O lines NMOS, 8K ROM MCU, 32 I/O lines	PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44

8-BIT MCU - 6801 FAMILY

Type	Description	Package
EF68B01FN EF68B01U4FN EF6801FN EF6801U4FN	HMOS, 2K ROM, 31 I/O, SCI, timer, standby RAM, 2 MHz HMOS, 4K ROM, 31 I/O, enhanced SCI, timer, standby RAM, 2 MHz HMOS, 2K ROM, 31 I/O, SCI, timer, standby RAM, 1 MHz HMOS, 4K ROM, 31 I/O, enhanced SCI, timer, standby RAM, 1 MHz	PLCC44 PLCC44 PLCC44 PLCC44

8-BIT MCU - Z8 FAMILY

Type	Description	Package
Z86R81C Z8601C Z8611C Z8621C Z8671C Z8681C	Z8681C with 240 RAM NMOS, 2K ROM MCU with 144 bytes RAM NMOS, 4K ROM MCU with 144 bytes RAM NMOS, 8K ROM MCU with 256 bytes RAM NMOS, MCU with BASIC/debug interpreter ROMless MCU with up to 64K extend addressable ROM/RAM	PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44

8-BIT MICROPROCESSORS - 6800 FAMILY

Type	Description	Package
EF68A02FN EF68A03FN EF68A03U4FN EF68A09EFN EF68A09FN EF68B02FN EF68B03FN EF68B09EFN EF68B09FN EF6802FN EF6803FN EF6803U4FN EF6809EFN EF6809FN	NMOS 8-bit MPU with RAM & clock, 1.5 MHz NMOS ROMless MCU, 1.5 MHz EF6803 with 192 b RAM, 1.5 MHz 6809 CPU with external clock, 1.5 MHz High performance 8-bit MPU, 1.5 MHz NMOS 8-bit MPU with RAM & clock, 2 MHz NMOS ROMless MCU, 2 MHz 6809 CPU with external clock, 2 MHz High performance 8-bit MPU, 2 MHz NMOS 8-bit MPU with RAM & clock, 1 MHz NMOS ROMless MCU, 1 MHz EF6803 with 192 b RAM, 1 MHz 6809 CPU with external clock, 1 MHz High performance 8-bit MPU, 1 MHz	PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44 PLCC44

8-BIT PERIPHERALS - 6800 FAMILY

Type	Description	Package
EF68A21FN EF68A40FN EF68A50FN EF68A54FN EF68B21FN EF68B40FN EF68B50FN EF68B54FN EF6821FN EF6840FN EF6850FN EF6854FN	Peripheral Interface Adapter, 1.5 MHz Programmable Timer, 1.5 MHz Asynchronous Communication Interface Adapter, 1.5 MHz Advanced Data Link Controller, 1.5 MHz Peripheral Interface Adapter, 2 MHz Programmable Timer, 2 MHz Asynchronous Communication Interface Adapter, 2 MHz Advanced Data Link Controller, 2 MHz Peripheral Interface Adapter, 1 MHz Programmable Timer, 1 MHz Asynchronous Communication Interface Adapter, 1 MHz Advanced Data Link Controller, 1 MHz	PLCC44 PLCC28 PLCC28 PLCC28 PLCC44 PLCC28 PLCC28 PLCC28 PLCC44 PLCC28 PLCC28 PLCC28

DATA PROCESSING

MICROS & PERIPHERALS 8-BIT PERIPHERALS - Z80 FAMILY

Type	Description	Package
Z8400C,K Z8410C,K Z8420C,K Z8430C,K Z8444C,K	CPU with up to 8 MHz clock frequency DMA with up to 4 MHz clock frequency PIO with up to 6 MHz clock frequency CIC with up to 6 MHz clock frequency SIO with up to 6 MHz clock frequency	PLCC/LCCC44 PLCC/LCCC44 PLCC/LCCC44 PLCC/LCCC44 PLCC/LCCC44

8-BIT PERIPHERALS - Z80 CMOS FAMILY

Type	Description	Package
Z84C00C Z84C10C Z84C20C Z84C30C Z84C44C	CMOS CPU with up to 8 MHz clock frequency DMA with up to 6 MHz clock frequency PIO with up to 6 MHz clock frequency CTC with up to 6 MHz clock frequency CMOS SIO with up to 6 MHz clock frequency	PLCC44 PLCC44 PLCC44 PLCC44 PLCC44

16-BIT MICROPROCESSORS - 68000 FAMILY

Type	Description	Package
TS68000FN8 TS68000FN10 TS68000FN12 TS68000FN16 TS68008FN8 TS68008FN10	8 MHz clock frequency with 32-bit internal structure 10 MHz clock frequency with 32-bit internal structure 12.5 MHz clock frequency with 32-bit internal structure 16 MHz clock frequency with 32-bit internal structure 8 MHz clock frequency, TS68000 8-bit bus version 10 MHz clock frequency, TS68000 8-bit bus version	PLCC68 PLCC68 PLCC68 PLCC68 PLCC52 PLCC52

16-BIT MICROPROCESSORS - Z8000 FAMILY

Type	Description	Package
Z8001K Z8002C,K Z8010K Z8030C,K Z8036C,K Z8038C,K Z8060K	16-bit segmented CPU, 8M byte, up to 10 MHz clock frequency 16-bit non segmented CPU, 64K byte, up to 10 MHz clock frequency MMU for Z8001 SEG CPU, up to 10 MHz clock frequency SSC (dual), up to 6 MHz clock frequency CIO counter/timer and parallel I/O, up to 6 MHz clock frequency FIFO I/O interface, up to 6 MHz clock frequency FIFO buffer unit (and Z8038 expander) up to 4 MHz clock frequency	LCCC52 PLCC/LCCC44 LCCC52 PLCC/LCCC44 PLCC/LCCC44 PLCC/LCCC44 LCCC44

16-BIT PERIPHERALS - 68000 FAMILY

Type	Description	Package
MK68230Q8 MK68564Q4 MK68564Q5 MK68901Q4 MK68901Q5 TS68HC901FN TS68483CFN15 TS68483CFN18 TS68494CFN15	Parallel interface timer, 8 MHz Serial I/O, 4 MHz Serial I/O, 5 MHz Multifunction peripheral, 4 MHz Multifunction peripheral, 5 MHz CMOS multifunction peripheral, 4 MHz High performance graphic processor, 2048 × 2048, 15 MHz High performance graphic processor, 2048 × 2048, 18 MHz Colour palette : 256 / 4096	PLCC52 PLCC52 PLCC52 PLCC52 PLCC52 PLCC52 PLCC68 PLCC68 PLCC44

DATA PROCESSING

MICROS & PERIPHERALS

16-BIT PERIPHERALS - Z8500 UNIVERSAL PERIPHERALS

Type	Description	Package
Z8530C,K Z8536C,K	SCC (dual), up to 6 MHz clock frequency CIO counter/timer and parallel I/O, up to 6 MHz clock frequency	PLCC/LCCC44 PLCC/LCCC44

NEW FAMILIES

ST6 - 8-BIT HCMOS MICROCONTROLLER FAMILY

Type	Description	Package
ST6031M6 ST60R4XC6, ST60R4XK6 ST6040C6 ST60R5XC6, ST60R5XK6 ST6050C6 ST61E24K6 ST6124C6 ST61E54K8 ST6154Q8	HCMOS 4K ROM MCU, Pre-amp, Pulse detector, 16 I/O lines HCMOS ROMless MCU (emulation of ST6040/41) HCMOS 4K ROM MCU, A/D converter, LCD driver, 15 I/O lines HCMOS ROMless MCU (emulation of ST6050/51/52) HCMOS 4K ROM MCU, A/D converter, Pre-amp, 30 I/O lines HCMOS EPROM MCU (emulation of ST6124) HCMOS 2.5K ROM MCU, LCD driver, power supply supervisor, 16 I/O lines HCMOS EPROM MCU (emulation of ST6154) HCMOS 3.6K ROM MCU, LCD driver, PLL, 16 I/O lines	SQ28 PLCC84, LCCC84 PLCC44 PLCC84, LCCC84 PLCC44 LCCC44-W PLCC44 LCCC52-W QFP52

ST8 - HIGH SPEED 8-BIT HCMOS MICROCONTROLLER FAMILY

Type	Description	Package
ST8108C6 ST81E08L6	HCMOS 8K ROM MCU, 176 Bytes RAM, Timer, Synch. & asynch. serial interfaces, 24 I/O lines HCMOS EPROM MCU (emulation of ST8108C6)	PLCC44 CLCC44-W

ST9 - HIGH SPEED 8/16-BIT HCMOS MICROCOMPUTER FAMILY

Type	Description	Package
ST90E23K6 ST9023C6 ST90E30K6 ST9030C6	HCMOS high end core, 8K EPROM, 256 Reg. file, 1 × 16 Bit watch dog timer, 1 serial communication controller, 1 × 16 Bit multifunction timer, MSPI and I2CBUS serial interface, 36 I/O lines HCMOS high end core, 8K ROM, 256 Reg. file, 1 × 16 Bit watch dog timer, 1 serial communication controller, 1 × 16 Bit multifunction timer, MSPI and I2CBUS serial interface, 36 I/O lines HCMOS high end core, 8K EPROM, 256 Reg. file, 1 × 16 Bit watch dog timer, 1 serial communication controller, 2 × 16 Bit multifunction timers, MSPI and I2CBUS serial interface, 8 channels by 8-Bit analog to digital converter, 56 I/O lines HCMOS high end core, 8K ROM, 256 Reg. file, 1 × 16 Bit watch dog timer, MSPI and I2CBUS serial interface, 1 serial communication controller, 2 × 16 Bit multifunction timers, 8 channels by 8-Bit analog to digital converter, 56 I/O lines	CLCC44-W PLCC44 CLCC68-W PLCC68

DATA PROCESSING

DISPLAY CIRCUITS AND GRAPHIC PROCESSORS

Type	Description	Package
EF9345FN EF9369FN TS68483CFN15 TS68483CFN18 TS68494CFN15 TS9370FN	Single chip alphanumeric and semigraphic display processor Colour palette : 16/4096 High performance graphic processor, 2048 x 2048, 15 MHz High performance graphic processor, 2048 x 2048, 18 MHz Colour palette : 256/4096 Same as EF9369 with linear law	PLCC44 PLCC28 PLCC68 PLCC68 PLCC44 PLCC28

DATA COMMUNICATION CIRCUIT - PACKET SWITCHING

Type	Description	Package
MK5025	X.25 LAPB / ISDN LAPD / HDLC CMOS Hi-speed link level controller with DMA	PLCC52

CONSUMER

Type	Description	Package
EF9345FN EF9369FN L272D L2726 L6235 L6236 M3004M1 M3005M1 M8438AC M9306 TDA3410D TDA3420D TDA7211D TDA7220D TDA7233D TDA7236D TDA7282D TDA7300D TDA7361D TEA5701 TS68483CFN15 TS68483CFN18 TS68494CFN15 TS9370FN	Single chip alphanumeric and semigraphic display processor Colour palette : 16/4096 Dual power op-amp Low drop dual power op-amp R-Dat brushless DC motor driver Bidirectionnal R-Dat brushless DC motor driver RC transmitter - 64 commands RC transmitter - 64 commands CMDS (use with UAA4009) 32 segment static LCD driver 16 x 16, clock frequency 250 kHz, NMOS EEPROM Dual low-noise preamplifier with autoreverse Dual very low-noise preamplifier Low voltage FM tuner front end AF-FM receiver 1W amplifier with mute, low voltage Very low voltage audio-bridge Stereo preamplifier (low voltage) Digital controlled stereo audio processor Narrow band FM-IF demodulator for cordless Video head amplifier High performance graphic processor, 2048 x 2048, 15 MHz High performance graphic processor, 2048 x 2048, 18 MHz Colour palette : 256/4096 Same as EF9369 with linear law	PLCC44 PLCC28 SO16 SO20 PLCC20 PLCC20 SO20 SO20 PLCC44 SO8 SO16 SO16 SO8 SO16 SO8 SO8 SO8 SO28 SO16 SO20 PLCC68 PLCC68 PLCC44 PLCC28

AUTOMOTIVE

Type	Description	Package
L482P L484P L497P L530P L9610C L9701 LM2901D LM2901DT LM2902D LM2902DT LM2903D LM2903DT LM2904D LM2904DT M9306	Electronic ignition controller (hall effect pick-up) Electronic ignition controller (magnetic pick-up) Electronic ignition controller (hall effect pick-up) Electronic ignition interface for microprocessor (hall magnetic) PWM powermos controller Octal ground contact monitoring circuit Low power - low offset voltage - quad comparator Low power - low offset voltage - quad comparator Low power - single power supply - quad bipolar op-amp Low power - single power supply - quad bipolar op-amp Low power - low offset voltage - dual comparator Low power - low offset voltage - dual comparator Low power - single power supply - dual bipolar op-amp Low power - single power supply - dual bipolar op-amp 16 x 16, clock frequency 250 kHz, NMOS EEPROM	SO16 SO16 SO16 SO16 SO16 SO20 SO14 SO14 tape SO14 SO14 tape SO8 SO8 tape SO8 SO8 tape SO8

GENERAL PURPOSE & INDUSTRIAL

MINIMELF / MELF



MINIMELF



MELF

SCHOTTKY DIODES

Type	V _{RRM} (V)	I _F I _O * (mA)	I _R (1) max (μA)	V _R (V)	V _F (1) max (V)	I _F (mA)	C max (pF)	V _R (V)	Dynamic parameters	Package
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UHF and ultra fast switching

T_{amb} = 25°C

TMM BAR 19	4	30	0.25	3	0.6	10	1	1	F = 6 dB / 1 GHz	MINIMELF
TMM BAT 29	5	30	0.05	1	0.55	10	1	0	Q _S < 3 pC / 10 mA	
TMM BAT 19	10	30	0.1	5	0.4	1	1.2	0	τ < 100 ps / 20 mA	
TMM BAT 45	15	30	0.1	6	0.5	10	1.1	1	t _{rr} < 1 ns / 3 mA	
TMM BAR 10 / TMM 5712	20	35	0.1	15	0.41	1	1.2	0	τ < 100 ps / 5 mA	
TMM BAR 11	15	20	0.1	8	0.41	1	1.2	0	τ < 100 ps / 5 mA	
TMM BAR 28 / TMM 5711	70	15	0.2	50	0.41	1	2	0	τ < 100 ps / 5 mA	
TMM 6263	60	15	0.2	50	0.41	1	2.2	0	τ < 100 ps / 5 mA	

general purpose

T_{amb} = 25°C

TMM BAT 42	30	200	0.5	25	{ 0.4 0.65 1	10 50 200	7	§ 1	t _{rr} < 5 ns / 10 mA	MINIMELF
TMM BAT 43	30	200	0.5	25	{ 0.45 1	15 200	7	§ 1	η > 80 % / 45 MHz	
TMM BAT 47	20	350	4	10	{ 0.25 0.4 1	0.1 10 300	12	§ 1	t _{rr} < 10 ns / 10 mA	
TMM BAT 48	40	350	2	10	{ 0.25 0.4 0.9	0.1 10 500	12	§ 1	t _{rr} < 10 ns / 10 mA	
TMM BAT 41	100	100	0.1	50	{ 0.45 1	1 200	2	§ 1		
TMM BAT 46	100	150	2	50	{ 0.25 0.45 1	0.1 10 250	6	§ 1		
TM BAT 49	80	1000	200	80	{ 0.32 0.42 1	10 100 1000	120	§ 0		MELF
TM BYV 10-20A	20	1000*	300	20	{ 0.45 0.75	1000 3000	330	§ 0		
TM BYV 10-20	20	1000*	500	20	{ 0.55 0.85	1000 3000	220	§ 0		
TM BYV 10-30	30	1000*	500	30	{ 0.55 0.85	1000 3000	220	§ 0		
TM BYV 10-40	40	1000*	500	40	{ 0.55 0.85	1000 3000	220	§ 0		
TM BYV 10-60	60	1000*	500	60	{ 0.70 1	1000 3000	150	§ 0		

F : Mixer noise figure.

Q_S : Stored charges (B-line).

η : Detection efficiency.

τ : Minority carrier life time (Krakauer method).

(1) Pulse test t_p ≤ 300 μs δ < 2%.

§ Typical value.

GENERAL PURPOSE & INDUSTRIAL

ZENER DIODES

Type	V_{ZT}/I_{ZT}^*		r_{ZT}/I_{ZT}^*	I_{ZT}^*	r_{ZK}/I_{ZK}		α_{VZ}		I_R / V_R		V_R	I_{ZM}	I_{ZSM}	Package
	min	max	max		max		min	max	T_{amb} 25°C	T_{amb} 150°C				
	(V)		(Ω)	(mA)	(Ω)	(mA)	($10^{-4}/^{\circ}\text{C}$)		max	max	(V)	(mA)	(mA)	

 500 mW / $T_{amb} = 25^{\circ}\text{C}$ $T_j \text{ max} = 175^{\circ}\text{C}$
 $V_F \leq 1.5 \text{ V} (T_{amb} = 25^{\circ}\text{C}, I_F = 0.2 \text{ A})$

BZV 55 C 0V8 (1)	0.73	0.83	8	5	600	1								
P BZV 55 C 2V4	2.28	2.56	85	5	600	1	-8	-6	50	100	1	155	1720	
P BZV 55 C 2V7	2.5	2.9	85	5	600	1	-8	-6	10	50	1	135	1600	
BZV 55 C 3V0	2.8	3.2	85	5	600	1	-8	-6	4	40	1	125	1500	
P BZV 55 C 3V3	3.1	3.5	85	5	600	1	-8	-5	2	40	1	115	1400	
P BZV 55 C 3V6	3.4	3.8	85	5	600	1	-8	-4	2	40	1	105	1330	
P BZV 55 C 3V9	3.7	4.1	85	5	600	1	-7	-3	2	40	1	95	1270	
P BZV 55 C 4V3	4.0	4.6	75	5	600	1	-4	-1	1	20	1	90	1220	
P BZV 55 C 4V7	4.4	5.0	60	5	600	1	-3	1	0.5	10	1	85	1160	
P BZV 55 C 5V1	4.8	5.4	35	5	550	1	-2	5	0.1	2	1	80	1100	
P BZV 55 C 5V6	5.2	6.0	25	5	450	1	-1	6	0.1	2	1	70	1040	
P BZV 55 C 6V2	5.8	6.6	10	5	200	1	0	7	0.1	2	2	64	980	
P BZV 55 C 6V8	6.4	7.2	8	5	150	1	1	8	0.1	2	3	58	900	
P BZV 55 C 7V5	7.0	7.9	7	5	50	1	1	9	0.1	2	5	53	810	
P BZV 55 C 8V2	7.7	8.7	7	5	50	1	1	9	0.1	2	6.2	47	760	
P BZV 55 C 9V1	8.5	9.6	10	5	50	1	2	10	0.1	2	6.8	43	670	
P BZV 55 C 10	9.4	10.6	15	5	70	1	3	11	0.1	2	7.5	40	600	
P BZV 55 C 11	10.4	11.6	20	5	70	1	3	11	0.1	2	8.2	36	550	
P BZV 55 C 12	11.4	12.7	20	5	90	1	3	11	0.1	2	9.1	32	500	
BZV 55 C 13	12.4	14.1	26	5	110	1	3	11	0.1	2	10	29	450	
P BZV 55 C 15	13.8	15.6	30	5	110	1	3	11	0.1	2	11	27	380	
BZV 55 C 16	15.3	17.1	40	5	170	1	3	11	0.1	2	12	24	350	
BZV 55 C 18	16.8	19.1	50	5	170	1	3	11	0.1	2	13	21	300	
BZV 55 C 20	18.8	21.2	55	5	220	1	3	11	0.1	2	15	20	270	
BZV 55 C 22	20.8	23.3	55	5	220	1	3	11	0.1	2	16	18	250	
BZV 55 C 24	22.8	25.6	80	5	220	1	4	12	0.1	2	18	16	225	
BZV 55 C 27	25.1	28.9	80	5	220	1	4	12	0.1	2	20	14	200	
BZV 55 C 30	28	32	80	5	220	1	4	12	0.1	2	22	13	190	
BZV 55 C 33	31	35	80	5	220	1	4	12	0.1	2	24	12	175	
BZV 55 C 36	34	38	80	5	220	1	4	12	0.1	2	27	11	160	
BZV 55 C 39	37	41	90	2.5	500	0.5	4	12	0.1	5	30	10	148	
BZV 55 C 43	40	46	90	2.5	600	0.5	4	12	0.1	5	33	9.2	135	
BZV 55 C 47	44	50	110	2.5	700	0.5	4	12	0.1	5	36	8.5	123	
BZV 55 C 51	48	54	125	2.5	700	0.5	4	12	0.1	10	39	7.8	113	
BZV 55 C 56	52	60	135	2.5	1000	0.5	4	12	0.1	10	43	7.0	104	
BZV 55 C 62	58	66	150	2.5	1000	0.5	4	12	0.1	10	47	6.4	93	
BZV 55 C 68	64	72	200	2.5	1000	0.5	4	12	0.1	10	51	5.9	87	
BZV 55 C 75	70	80	250	2.5	1500	0.5	4	12	0.1	10	56	5.3	79	
BZV 55 C 82	77	87	300	2.5	2000	0.5	4	12	0.1	10	62	4.8	72	
BZV 55 C 91	85	96	450	1	5000	0.1	4	12	0.1	10	68	4.4	65	
BZV 55 C 100	94	106	450	1	5000	0.1	4	12	0.1	10	75	4.0	59	
BZV 55 C 110	104	116	600	1	5000	0.1	4	12	0.1	10	82	3.6	54	
BZV 55 C 120	114	127	800	1	5000	0.1	4	12	0.1	10	91	3.3	49	
BZV 55 C 130	124	141	1000	1	5000	0.1	4	12	0.1	10	100	3.0	45	
BZV 55 C 150	138	156	1200	1	5000	0.1	4	12	0.1	10	110	2.6	39	
BZV 55 C 160	153	171	1500	1	5000	0.1	4	12	0.1	10	120	2.5	37	
BZV 55 C 180	168	191	1800	1	5000	0.1	4	12	0.1	10	130	2.2	33	
BZV 55 C 200	188	212	2000	1	5000	0.1	4	12	0.1	10	150	2.0	30	

MINIMELF

 *Pulse test $20 \text{ ms} \leq t_p \leq 50 \text{ ms}$ $\delta < 2\%$

The regulation voltages are defined according to the E 24 series.

P : Preferred voltages.

(1) BZV 55 C 0V8 is to be used with forward bias.

GENERAL PURPOSE & INDUSTRIAL

ZENER DIODES

Type	V_{ZT}/I_{ZT}^*	r_{ZT}/I_{ZT}^*	I_{ZT}^*	r_{ZK}/I_{ZK}		α_{VZ}	I_R/V_R T_{amb} 25°C	V_R	I_{ZM} T_{amb} 75°C	Package
	nom (V)	max (Ω)	(mA)	max (Ω)	(mA)	max ($10^{-4}/^{\circ}\text{C}$)	max (μA)	(V)	(mA)	

500 mW / $T_{amb} = 75^{\circ}\text{C}$ $T_j \text{ max} = 200^{\circ}\text{C}$ $V_F \leq 1.1 \text{ V}$ ($T_{amb} = 25^{\circ}\text{C}$, $I_F = 0.2 \text{ A}$)

P TMM 5221 B	2.4	30	20	1200	0.25	— 8.5	100	1.0	191	MINIMELF
TMM 5222 B	2.5	30	20	1250	0.25	— 8.5	100	1.0	182	
P TMM 5223 B	2.7	30	20	1300	0.25	— 8.0	75	1.0	168	
TMM 5224 B	2.8	30	20	1400	0.25	— 8.0	75	1.0	162	
TMM 5225 B	3.0	29	20	1600	0.25	— 7.5	50	1.0	151	
P TMM 5226 B	3.3	28	20	1600	0.25	— 7.0	25	1.0	138	
P TMM 5227 B	3.6	24	20	1700	0.25	— 6.5	15	1.0	126	
P TMM 5228 B	3.9	23	20	1900	0.25	— 6.0	10	1.0	115	
P TMM 5229 B	4.3	22	20	2000	0.25	± 5.5	5	1.0	106	
P TMM 5230 B	4.7	19	20	1900	0.25	± 3.0	5	2.0	97	
P TMM 5231 B	5.1	17	20	1600	0.25	± 3.0	5	2.0	89	
P TMM 5232 B	5.6	11	20	1600	0.25	+ 3.8	5	3.0	81	
TMM 5233 B	6.0	7.0	20	1600	0.25	+ 3.8	5	3.5	76	
P TMM 5234 B	6.2	7.0	20	1000	0.25	+ 4.5	5	4.0	73	
P TMM 5235 B	6.8	5.0	20	750	0.25	+ 5.0	3	5.0	67	
P TMM 5236 B	7.5	6.0	20	500	0.25	+ 5.8	3	6.0	61	
P TMM 5237 B	8.2	8.0	20	500	0.25	+ 6.2	3	6.5	55	
TMM 5238 B	8.7	8.0	20	600	0.25	+ 6.5	3	6.5	52	
P TMM 5239 B	9.1	10	20	600	0.25	+ 6.8	3	7.0	50	
P TMM 5240 B	10	17	20	600	0.25	+ 7.5	3	8.0	45	
TMM 5241 B	11	22	20	600	0.25	+ 7.6	2	8.4	41	
P TMM 5242 B	12	30	20	600	0.25	+ 7.7	1	9.1	38	
P TMM 5243 B	13	13	9.5	600	0.25	+ 7.9	0.5	9.9	35	
P TMM 5244 B	14	15	9.0	600	0.25	+ 8.2	0.1	10	32	
P TMM 5245 B	15	16	8.5	600	0.25	+ 8.2	0.1	11	30	
TMM 5246 B	16	17	7.8	600	0.25	+ 8.3	0.1	12	28	
TMM 5247 B	17	19	7.4	600	0.25	+ 8.4	0.1	13	27	
TMM 5248 B	18	21	7.0	600	0.25	+ 8.5	0.1	14	25	
TMM 5249 B	19	23	6.6	600	0.25	+ 8.6	0.1	14	24	
TMM 5250 B	20	25	6.2	600	0.25	+ 8.6	0.1	15	23	
TMM 5251 B	22	29	5.6	600	0.25	+ 8.7	0.1	17	21	
TMM 5252 B	24	33	5.2	600	0.25	+ 8.8	0.1	18	19.1	
TMM 5253 B	25	35	5.0	600	0.25	+ 8.9	0.1	19	18.2	
TMM 5254 B	27	41	4.6	600	0.25	+ 9.0	0.1	21	16.8	
TMM 5255 B	28	44	4.5	600	0.25	+ 9.1	0.1	21	16.2	
TMM 5256 B	30	49	4.2	600	0.25	+ 9.1	0.1	23	15.1	
TMM 5257 B	33	58	3.8	700	0.25	+ 9.2	0.1	25	13.8	
TMM 5258 B	36	70	3.4	700	0.25	+ 9.3	0.1	27	12.6	
TMM 5259 B	39	80	3.2	800	0.25	+ 9.4	0.1	30	11.5	
TMM 5260 B	43	93	3.0	900	0.25	+ 9.5	0.1	33	10.6	
TMM 5261 B	47	105	2.7	1000	0.25	+ 9.5	0.1	36	9.7	
TMM 5262 B	51	125	2.5	1100	0.25	+ 9.6	0.1	39	8.9	
TMM 5263 B	56	150	2.2	1300	0.25	+ 9.6	0.1	43	8.1	
TMM 5264 B	60	170	2.1	1400	0.25	+ 9.7	0.1	46	7.6	
TMM 5265 B	62	185	2.0	1400	0.25	+ 9.7	0.1	47	7.3	
TMM 5266 B	68	230	1.8	1600	0.25	+ 9.7	0.1	52	6.7	
TMM 5267 B	75	270	1.7	1700	0.25	+ 9.8	0.1	56	6.1	
TMM 5268 B	82	330	1.5	2000	0.25	+ 9.8	0.1	62	5.5	
TMM 5269 B	87	370	1.4	2200	0.25	+ 9.9	0.1	68	5.2	
TMM 5270 B	91	400	1.4	2300	0.25	+ 9.9	0.1	69	5.0	
TMM 5271 B	100	500	1.3	2600	0.25	+ 11.0	0.1	76	4.5	
TMM 5272 B	110	750	1.1	3000	0.25	+ 11.0	0.1	84	4.1	
TMM 5273 B	120	900	1.0	4000	0.25	+ 11.0	0.1	91	3.8	
TMM 5274 B	130	1100	0.95	4500	0.25	+ 11.0	0.1	99	3.5	
TMM 5275 B	140	1300	0.90	4500	0.25	+ 11.0	0.1	106	3.2	
TMM 5276 B	150	1500	0.85	5000	0.25	+ 11.0	0.1	114	3.0	
TMM 5277 B	160	1700	0.80	5500	0.25	+ 11.0	0.1	122	2.8	
TMM 5278 B	170	1900	0.74	5500	0.25	+ 11.0	0.1	129	2.7	
TMM 5279 B	180	2200	0.68	6000	0.25	+ 11.0	0.1	137	2.5	
TMM 5280 B	190	2400	0.66	6500	0.25	+ 11.0	0.1	144	2.4	
TMM 5281 B	200	2500	0.65	7000	0.25	+ 11.0	0.1	152	2.3	

* Measure under thermal equilibrium and DC current test conditions ($T_{amb} 25^{\circ}\text{C}$).

P : Preferred voltages.

Tolerance on nominal V_{ZT} value : $\pm 5\%$.

GENERAL PURPOSE & INDUSTRIAL

ZENER DIODES

Type	V_{ZT}/I_{ZT}^*	r_{ZT}/I_{ZT}^*	I_{ZT}^*	r_{ZK}/I_{ZK}		α_{VZ}	I_R/V_R T_{amb} 25°C	V_R	I_{ZM} T_{amb} 50°C	Package
	nom (V)	max (Ω)	(mA)	max (Ω)	(mA)	typ (10 ⁻⁴ /°C)	max (μA)	(V)	(mA)	

 1 W / $T_{amb} = 50^\circ\text{C}$ $T_j \text{ max} = 200^\circ\text{C}$
 $V_F \leq 1.2 \text{ V} (T_{amb} = 25^\circ\text{C}, I_F = 0.2 \text{ A})$

P TM 4728 A	3.3	10	76	400	1	- 6	100	1.0	276	MELF
TM 4729 A	3.6	10	69	400	1	- 6	100	1.0	252	
P TM 4730 A	3.9	9	64	400	1	- 5	50	1.0	234	
TM 4731 A	4.3	9	58	400	1	- 3	10	1.0	217	
P TM 4732 A	4.7	8	53	500	1	- 1	10	1.0	193	
P TM 4733 A	5.1	7	49	550	1	1	10	1.0	178	
P TM 4734 A	5.6	5	45	600	1	3	10	2.0	162	
P TM 4735 A	6.2	2	41	700	1	4	10	3.0	146	
P TM 4736 A	6.8	3.5	37	700	1	5	10	4.0	133	
P TM 4737 A	7.5	4	34	700	0.5	5	10	5.0	121	
P TM 4738 A	8.2	4.5	31	700	0.5	6	10	6.0	110	
P TM 4739 A	9.1	5	28	700	0.5	6	10	7.0	100	
P TM 4740 A	10	7	25	700	0.25	7	10	7.6	91	
TM 4741 A	11	8	23	700	0.25	7	5	8.4	83	
P TM 4742 A	12	9	21	700	0.25	7	5	9.1	76	
P TM 4743 A	13	10	19	700	0.25	7	5	9.9	69	
P TM 4744 A	15	14	17	700	0.25	8	5	11.4	61	
TM 4745 A	16	16	15.5	700	0.25	8	5	12.2	57	
TM 4746 A	18	20	14	750	0.25	8	5	13.7	50	
TM 4747 A	20	22	12.5	750	0.25	8	5	15.2	45	
TM 4748 A	22	23	11.5	750	0.25	8	5	16.7	41	
TM 4749 A	24	25	10.5	750	0.25	8	5	18.2	38	
TM 4750 A	27	35	9.5	750	0.25	9	5	20.6	34	
TM 4751 A	30	40	8.5	1000	0.25	9	5	22.8	30	
TM 4752 A	33	45	7.5	1000	0.25	9	5	25.1	27	
TM 4753 A	36	50	7.0	1000	0.25	9	5	27.4	25	
TM 4754 A	39	60	6.5	1000	0.25	9	5	29.7	23	
TM 4755 A	43	70	6.0	1500	0.25	9	5	32.7	22	
TM 4756 A	47	80	5.5	1500	0.25	9	5	35.8	19	
TM 4757 A	51	95	5.0	1500	0.25	9	5	38.8	18	
TM 4758 A	56	110	4.5	2000	0.25	9	5	42.6	16	
TM 4759 A	62	125	4.0	2000	0.25	9	5	47.1	14	
TM 4760 A	68	150	3.7	2000	0.25	9	5	51.7	13	
TM 4761 A	75	175	3.3	2000	0.25	9	5	56	12	
TM 4762 A	82	200	3.0	3000	0.25	9	5	62.2	11	
TM 4763 A	91	250	2.8	3000	0.25	9	5	69.2	10	
TM 4764 A	100	350	2.5	3000	0.25	9	5	76	9	
TM 4187 B	110	450	2.3	4000	0.25	10	5	83.6	8.6	
TM 4188 B	120	550	2.0	4500	0.25	10	5	91.2	7.8	
TM 4189 B	130	700	1.9	5000	0.25	10	5	98.8	7	
TM 4190 B	150	1000	1.7	6000	0.25	10	5	114	6.4	
TM 4191 B	160	1100	1.6	6500	0.25	10	5	121.6	5.8	
TM 4192 B	180	1200	1.4	7000	0.25	10	5	136.8	5.2	
TM 4193 B	200	1500	1.2	8000	0.25	10	5	152	4.7	

 * Measure under thermal equilibrium and DC current test conditions ($T_{amb} 25^\circ\text{C}$).

 Tolerance on nominal V_{ZT} value : $\pm 5\%$.

P : Preferred voltages.

GENERAL PURPOSE & INDUSTRIAL

ZENER DIODES

Type	V_{ZT}/I_{ZT}^*		r_{ZT}/I_{ZT}^*	I_{ZT}^*	r_{ZK}/I_{ZK}		α_{VZ}		I_R / V_R		V_R	I_{ZM}	I_{ZSM}	Package
	min	max	max		max		min	max	T_{amb} 25°C	T_{amb} 150°C				
	(V)	(V)	(Ω)	(mA)	(Ω)	(mA)	($10^{-4}/^{\circ}\text{C}$)	($10^{-4}/^{\circ}\text{C}$)	max	max	(V)	(mA)	(mA)	

1.3 W / $T_{amb} = 25^{\circ}\text{C}$ $T_j \text{ max} = 175^{\circ}\text{C}$
 $V_F \leq 1 \text{ V}$ ($T_{amb} = 25^{\circ}\text{C}$, $I_F = 0.2 \text{ A}$)

BZM 85 C 2V7	2.5	2.9	20	80	400	1	-8	-5	150	300	1	370	3200	MELF
BZM 85 C 3V0	2.8	3.2	20	80	400	1	-8	-5	100	300	1	340	3000	
P BZM 85 C 3V3	3.1	3.5	20	80	400	1	-8	-5	40	200	1	320	2800	
P BZM 85 C 3V6	3.4	3.8	20	70	500	1	-8	-5	20	50	1	290	2660	
P BZM 85 C 3V9	3.7	4.1	15	60	500	1	-7	-2	10	20	1	280	2540	
P BZM 85 C 4V3	4.0	4.6	13	50	500	1	-5	1	3	10	1	250	2440	
P BZM 85 C 4V7	4.4	5.0	13	45	500	1	-3	4	3	10	1	215	2320	
P BZM 85 C 5V1	4.8	5.4	10	45	500	1	-1	4	1	10	1.5	200	2200	
P BZM 85 C 5V6	5.2	6.0	7	45	400	1	0	4.5	1	10	2	190	2080	
P BZM 85 C 6V2	5.8	6.6	4	35	300	1	1	5.5	1	10	3	170	1960	
P BZM 85 C 6V8	6.4	7.2	3.5	35	300	1	1.5	6	1	10	4	155	1800	
P BZM 85 C 7V5	7.0	7.9	3	35	200	0.5	2	6.5	1	10	4.5	140	1620	
P BZM 85 C 8V2	7.7	8.7	5	25	200	0.5	3	7	1	10	6.2	130	1520	
P BZM 85 C 9V1	8.5	9.6	5	25	200	0.5	3.5	7.5	1	10	6.8	120	1340	
P BZM 85 C 10	9.4	10.6	7	25	200	0.5	4	8	0.5	10	7.5	105	1200	
BZM 85 C 11	10.4	11.6	8	20	300	0.5	4.5	8	0.5	10	8.2	97	1100	
P BZM 85 C 12	11.4	12.7	9	20	350	0.5	4.5	8.5	0.5	10	9.1	88	1000	
BZM 85 C 13	12.4	14.1	10	20	400	0.5	5	8.5	0.5	10	10	79	900	
P BZM 85 C 15	13.8	15.6	15	15	500	0.5	5.5	9	0.5	10	11	71	760	
BZM 85 C 16	15.3	17.1	15	15	500	0.5	5.5	9	0.5	10	12	66	700	
BZM 85 C 18	16.8	19.1	20	15	500	0.5	6	9	0.5	10	13	62	600	
BZM 85 C 20	18.8	21.2	24	10	600	0.5	6	9	0.5	10	15	56	540	
BZM 85 C 22	20.8	23.3	25	10	600	0.5	6	9.5	0.5	10	16	52	500	
BZM 85 C 24	22.8	25.6	25	10	600	0.5	6	9.5	0.5	10	18	47	490	
BZM 85 C 27	25.1	28.9	30	8	750	0.25	6	9.5	0.5	10	20	41	400	
BZM 85 C 30	28	32	30	8	1000	0.25	6	9.5	0.5	10	22	36	380	
BZM 85 C 33	31	35	35	8	1000	0.25	6	9.5	0.5	10	24	33	350	
BZM 85 C 36	34	38	40	8	1000	0.25	6	9.5	0.5	10	27	30	320	
BZM 85 C 39	37	41	50	6	1000	0.25	6	9.5	0.5	10	30	28	296	
BZM 85 C 43	40	46	50	6	1000	0.25	6	9.5	0.5	10	33	26	270	
BZM 85 C 47	44	50	90	4	1500	0.25	6	9.5	0.5	10	36	23	246	
BZM 85 C 51	48	54	115	4	1500	0.25	6	9.5	0.5	10	39	21	226	
BZM 85 C 56	52	60	120	4	2000	0.25	6	9.5	0.5	10	43	19	208	
BZM 85 C 62	58	66	125	4	2000	0.25	6	9.5	0.5	10	47	16	186	
BZM 85 C 68	64	72	130	4	2000	0.25	6	9.5	0.5	10	51	15	171	
BZM 85 C 75	70	80	135	4	2000	0.25	6	9.5	0.5	10	56	14	161	
BZM 85 C 82	77	87	200	2.7	3000	0.25	7	12	0.5	10	62	12	141	
BZM 85 C 91	85	96	250	2.7	3000	0.25	7	12	0.5	10	68	10	127	
BZM 85 C 100	94	106	350	2.7	3000	0.25	7	12	0.5	10	75	9.4	116	
BZM 85 C 110	104	116	450	2.7	4000	0.25	7	12	0.5	10	82	8.6	105	
BZM 85 C 120	114	127	550	2	4500	0.25	7	12	0.5	10	91	7.8	96	
BZM 85 C 130	124	141	700	2	5000	0.25	7	12	0.5	10	100	7.0	89	
BZM 85 C 150	138	156	1000	2	6000	0.25	7	12	0.5	10	110	6.4	77	
BZM 85 C 160	153	171	1100	1.5	6500	0.25	7	12	0.5	10	120	5.8	72	
BZM 85 C 180	168	191	1200	1.5	7000	0.25	7	12	0.5	10	130	5.2	64	
BZM 85 C 200	180	212	1500	1.5	8000	0.25	7	12	0.5	10	150	4.7	58	

 * Pulse test $20 \text{ ms} \leq t_p \leq 50 \text{ ms}$ $\delta < 2\%$.

P : Preferred devices.

The regulation voltages are defined according to the E 24 series.

TRIGGER DIODES (DIACS)

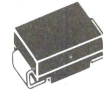
Type	Breakover voltage			Breakover voltage symmetry	Breakover current	ΔV between 0 and 10 mA	Package
	(V)						
	min	nom	max	ΔV max (V)	I_R max. (μA)	min. (V)	
TMM DB 3	28	32	36	± 3	100	5	MINIMELF

GENERAL PURPOSE & INDUSTRIAL

SOD 6 / SOD 15



SOD 6



SOD 15

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		Marking		I_{RM} @ V_{RM}		$V_{(BR)}^*$ @ I_R				$V_{(CL)}$ @ I_{pp} 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

400 W / 1 ms expo.

 $I_{FSM} = 50 A - 10 ms$ for unidirectional

SM4T 6V8	SM4T 6V8C	QD	VD	1000	5.5	6.12	6.8	7.48	10	10.8	37	5.7	SOD 6
SM4T 6V8A	SM4T 6V8CA	QE	VE	1000	5.8	6.45	6.8	7.14	10	10.5	38	5.7	
SM4T 7V5	SM4T 7V5C	QF	VF	500	6.05	6.75	7.5	8.25	10	11.7	34	6.1	
SM4T 7V5A	SM4T 7V5CA	QG	VG	500	6.4	7.13	7.5	7.88	10	11.3	35.4	6.1	
SM4T 10	SM4T 10C	QN	VN	10	8.1	9	10	11	1	15	27	7.3	
SM4T 10A	SM4T 10CA	QP	VP	10	8.55	9.5	10	10.5	1	14.5	27.6	7.3	
SM4T 12	SM4T 12C	QS	VS	5	9.72	10.8	12	13.2	1	17.3	23.1	7.8	
SM4T 12A	SM4T 12CA	QT	VT	5	10.2	11.4	12	12.6	1	16.7	24	7.8	
SM4T 15	SM4T 15C	QW	VW	5	12.1	13.5	15	16.5	1	22	18.2	8.4	
SM4T 15A	SM4T 15CA	QX	VX	5	12.8	14.3	15	15.8	1	21.2	19	8.4	
SM4T 18	SM4T 18C	RD	UD	5	14.5	16.2	18	19.8	1	26.5	15.1	8.8	
SM4T 18A	SM4T 18CA	RE	UE	5	15.3	17.1	18	18.9	1	25.2	16	8.8	
SM4T 22	SM4T 22C	RH	UH	5	17.8	19.8	22	24.2	1	31.9	12.5	9.2	
SM4T 22A	SM4T 22CA	RK	UK	5	18.8	20.9	22	23.1	1	30.6	13	9.2	
SM4T 24	SM4T 24C	RL	UL	5	19.4	21.6	24	26.4	1	34.7	11.5	9.4	
SM4T 24A	SM4T 24CA	RM	UM	5	20.5	22.8	24	25.2	1	33.2	12	9.4	
SM4T 27	SM4T 27C	RN	UN	5	21.8	24.3	27	29.7	1	39.1	10.2	9.6	
SM4T 27A	SM4T 27CA	RP	UP	5	23.1	25.7	27	28.4	1	37.5	10.7	9.6	
SM4T 30	SM4T 30C	RQ	UQ	5	24.3	27	30	33	1	43.5	9.2	9.7	
SM4T 30A	SM4T 30CA	RR	UR	5	25.6	28.5	30	31.5	1	41.5	9.6	9.7	
SM4T 33	SM4T 33C	RS	US	5	26.8	29.7	33	36.3	1	47.7	8.4	9.8	
SM4T 33A	SM4T 33CA	RT	UT	5	28.2	31.4	33	34.7	1	45.7	8.8	9.8	
SM4T 36	SM4T 36C	RU	UU	5	29.1	32.4	36	39.6	1	52	7.7	9.9	
SM4T 36A	SM4T 36CA	RV	UV	5	30.8	34.2	36	37.8	1	49.9	8	9.9	
SM4T 39	SM4T 39C	RW	UW	5	31.6	35.1	39	42.9	1	56.4	7.1	10.0	
SM4T 39A	SM4T 39CA	RX	UX	5	33.3	37.1	39	41	1	53.9	7.4	10.0	
SM4T 68	SM4T 68C	SN	WN	5	55.1	61.2	68	74.8	1	98	4.1	10.4	
SM4T 68A	SM4T 68CA	SP	WP	5	58.1	64.6	68	71.4	1	92	4.3	10.4	
SM4T 100	SM4T 100C	SW	WW	5	81	90	100	110	1	144	2.8	10.6	
SM4T 100A	SM4T 100CA	SX	WX	5	85.5	95	100	105	1	137	2.9	10.6	
SM4T 150	SM4T 150C	TH	XH	5	121	135	150	165	1	215	1.9	10.8	
SM4T 150A	SM4T 150CA	TK	XK	5	128	143	150	158	1	207	2	10.8	
SM4T 200	SM4T 200C	TS	XS	5	162	180	200	220	1	287	1.4	10.8	
SM4T 200A	SM4T 200CA	TT	XT	5	171	190	200	210	1	274	1.5	10.8	
SM4T 220		TU		5	178	198	220	242	1	315	1.3	10.8	
SM4T 220A		TV		5	188	209	220	231	1	301	1.4	10.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

For other voltages, please contact our sales offices.

GENERAL PURPOSE & INDUSTRIAL

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		Marking		I_{RM} @ V_{RM}		$V_{(BR)}^*$ @ I_R				$V_{(CL)}$ @ I_{pp} 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

600 W / 1 ms expo.

 $I_{FSM} = 50 A - 10 ms$ for unidirectional

SM6T 6V8	SM6T 6V8C	DD	LD	1000	5.5	6.12	6.8	7.48	10	10.8	55	5.7	SOD 6
SM6T 6V8A	SM6T 6V8CA	DE	LE	1000	5.8	6.45	6.8	7.14	10	10.5	57	5.7	
SM6T 7V5	SM6T 7V5C	DF	LF	500	6.05	6.75	7.5	8.25	10	11.7	51	6.1	
SM6T 7V5A	SM6T 7V5CA	DG	LG	500	6.4	7.13	7.5	7.88	10	11.3	53	6.1	
SM6T 10	SM6T 10C	DN	LN	10	8.1	9.0	10	11	1	15	40	7.3	
SM6T 10A	SM6T 10CA	DP	LP	10	8.55	9.5	10	10.5	1	14.5	41	7.3	
SM6T 15	SM6T 15C	DW	LW	5	12.1	13.5	15	16.5	1	22	27.5	8.4	
SM6T 15A	SM6T 15CA	DX	LX	5	12.8	14.3	15	15.8	1	21.2	28	8.4	
SM6T 18	SM6T 18C	ED	MD	5	14.5	16.2	18	19.8	1	26.5	22.5	8.8	
SM6T 18A	SM6T 18CA	EE	ME	5	15.3	17.1	18	18.9	1	25.2	24	8.8	
SM6T 22	SM6T 22C	EH	MH	5	17.8	19.8	22	24.2	1	31.9	18.5	9.2	
SM6T 22A	SM6T 22CA	EK	MK	5	18.8	20.9	22	23.1	1	30.6	20	9.2	
SM6T 24	SM6T 24C	EL	ML	5	19.4	21.6	24	26.4	1	34.7	17.5	9.4	
SM6T 24A	SM6T 24CA	EM	MM	5	20.5	22.8	24	25.2	1	33.2	18	9.4	
SM6T 27	SM6T 27C	EN	MN	5	21.8	24.3	27	29.7	1	39.1	15.5	9.6	
SM6T 27A	SM6T 27CA	EP	MP	5	23.1	25.7	27	28.4	1	37.5	16	9.6	
SM6T 30	SM6T 30C	EQ	MQ	5	24.3	27	30	33	1	43.5	13.5	9.7	
SM6T 30A	SM6T 30CA	ER	MR	5	25.6	28.5	30	31.5	1	41.4	14.5	9.7	
SM6T 33	SM6T 33C	ES	MS	5	26.8	29.7	33	36.3	1	47.7	12.5	9.8	
SM6T 33A	SM6T 33CA	ET	MT	5	28.2	31.4	33	34.7	1	45.7	13.1	9.8	
SM6T 36	SM6T 36C	EU	MU	5	29.1	32.4	36	39.6	1	52	11.5	9.9	
SM6T 36A	SM6T 36CA	EV	MV	5	30.8	34.2	36	37.8	1	49.9	12	9.9	
SM6T 39	SM6T 39C	EW	MW	5	31.6	35.1	39	42.9	1	56.4	10.6	10.0	
SM6T 39A	SM6T 39CA	EX	MX	5	33.3	37.1	39	41	1	53.9	11.1	10.0	
SM6T 68	SM6T 68C	FP	NP	5	55.1	61.2	68	74.8	1	98	6.1	10.4	
SM6T 68A	SM6T 68CA	FQ	NQ	5	58.1	64.6	68	71.4	1	92	6.5	10.4	
SM6T 100	SM6T 100C	FX	NX	5	81	90	100	110	1	144	4.2	10.6	
SM6T 100A	SM6T 100CA	FY	NY	5	85.5	95	100	105	1	137	4.4	10.6	
SM6T 150	SM6T 150C	GK	OK	5	121	135	150	165	1	215	2.8	10.8	
SM6T 150A	SM6T 150CA	GL	OL	5	128	143	150	158	1	207	2.9	10.8	
SM6T 200	SM6T 200C	GT	OT	5	162	180	200	220	1	287	2.1	10.8	
SM6T 200A	SM6T 200CA	GU	OU	5	171	190	200	210	1	274	2.2	10.8	
SM6T 220		GV		5	178	198	220	242	1	316	1.9	10.8	
SM6T 220A		GW		5	188	209	220	231	1	301	2	10.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

For other voltages, please contact our sales offices.

GENERAL PURPOSE & INDUSTRIAL

TRANSIENT VOLTAGE SUPPRESSORS «TRANSIL»

Type		Marking		I_{RM} @ V_{RM}		$V_{(BR)}^*$ @ I_R				$V_{(CL)}$ @ I_{pp} 1 ms expo		α_T max	Package
Unidirectional	Bidirectional	Unidirectional	Bidirectional	(μA)	(V)	min	nom	max	(mA)	(V)	(A)	($10^{-4}/^{\circ}C$)	

1.5 KW / 1 ms expo.

 $I_{FSM} = 150 A - 10 ms$ for unidirectional

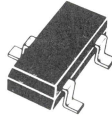
SM15T 6V8	SM15T 6V8C	MDD	BDD	1000	5.5	6.12	6.8	7.48	10	10.8	139	5.7	SOD 15
SM15T 6V8A	SM15T 6V8CA	MDE	BDE	1000	5.8	6.45	6.8	7.14	10	10.5	143	5.7	
SM15T 7V5	SM15T 7V5C	MDF	BDF	1000	6.05	6.75	7.5	8.25	10	11.7	128	6.1	
SM15T 7V5A	SM15T 7V5CA	MDG	BDG	1000	6.4	7.13	7.5	7.88	10	11.3	132	6.1	
SM15T 10	SM15T 10C	MDN	BDN	10	8.1	9.0	10	11	1	15	100	7.3	
SM15T 10A	SM15T 10CA	MDP	BDP	10	8.55	9.5	10	10.5	1	14.5	103	7.3	
SM15T 12	SM15T 12C	MDS	BDS	5	9.72	10.8	12	13.2	1	17.3	87	7.8	
SM15T 12A	SM15T 12CA	MDT	BDT	5	10.2	11.4	12	12.6	1	16.7	90	7.8	
SM15T 15	SM15T 15C	MDW	BDW	5	12.1	13.5	15	16.5	1	22	68	8.4	
SM15T 15A	SM15T 15CA	MDX	BDX	5	12.8	14.3	15	15.8	1	21.2	71	8.4	
SM15T 18	SM15T 18C	MED	BED	5	14.5	16.2	18	19.8	1	26.5	56.5	8.8	
SM15T 18A	SM15T 18CA	MEE	BEE	5	15.3	17.1	18	18.9	1	25.2	59.5	8.8	
SM15T 22	SM15T 22C	MEH	BEH	5	17.8	19.8	22	24.2	1	31.9	47	9.2	
SM15T 22A	SM15T 22CA	MEK	BEK	5	18.8	20.9	22	23.1	1	30.6	49	9.2	
SM15T 24	SM15T 24C	MEL	BEL	5	19.4	21.6	24	26.4	1	34.7	43	9.4	
SM15T 24A	SM15T 24CA	MEM	BEM	5	20.5	22.8	24	25.2	1	33.2	45	9.4	
SM15T 27	SM15T 27C	MEN	BEN	5	21.8	24.3	27	29.7	1	39.1	38.5	9.6	
SM15T 27A	SM15T 27CA	MEP	BEP	5	23.1	25.7	27	28.4	1	37.5	40	9.6	
SM15T 30	SM15T 30C	MEQ	BEQ	5	24.3	27	30	33	1	43.5	34.5	9.7	
SM15T 30A	SM15T 30CA	MER	BER	5	25.6	28.5	30	31.5	1	41.4	36	9.7	
SM15T 33	SM15T 33C	MES	BES	5	26.8	29.7	33	36.3	1	47.7	31.5	9.8	
SM15T 33A	SM15T 33CA	MET	BET	5	28.2	31.4	33	34.7	1	45.7	33	9.8	
SM15T 36	SM15T 36C	MEU	BEU	5	29.1	32.4	36	39.6	1	52	29	9.9	
SM15T 36A	SM15T 36CA	MEV	BEV	5	30.8	34.2	36	37.8	1	49.9	30	9.9	
SM15T 39	SM15T 39C	MEW	BEW	5	31.6	35.1	39	42.9	1	56.4	26.5	10.0	
SM15T 39A	SM15T 39CA	MEX	BEX	5	33.3	37.1	39	41	1	53.9	28	10.0	
SM15T 68	SM15T 68C	MFN	BFN	5	55.1	61.2	68	74.8	1	98	15.3	10.4	
SM15T 68A	SM15T 68CA	MFP	BFP	5	58.1	64.6	68	71.4	1	92	16.3	10.4	
SM15T 100	SM15T 100C	MFV	BFW	5	81	90	100	110	1	144	10.4	10.6	
SM15T 100A	SM15T 100CA	MFV	BFV	5	85.5	95	100	105	1	137	11	10.6	
SM15T 150	SM15T 150C	MGH	BGH	5	121	135	150	165	1	215	7	10.8	
SM15T 150A	SM15T 150CA	MGK	BGK	5	128	143	150	158	1	207	7.2	10.8	
SM15T 200	SM15T 200C	MGU	BGU	5	162	180	200	220	1	287	5.2	10.8	
SM15T 200A	SM15T 200CA	MGV	BGV	5	171	190	200	210	1	274	5.5	10.8	
SM15T 220		MGW		5	175	198	220	242	1	344	4.3	10.8	
SM15T 220A		MGX		5	185	209	220	231	1	328	4.6	10.8	

* Pulse test $t_p \leq 50 ms$ $\delta < 2\%$.

For other voltages, please contact our sales offices.

GENERAL PURPOSE & INDUSTRIAL

SOT 23



SOT 23

NPN GENERAL PURPOSE TRANSISTORS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}		V _{CE(sat)} @ I _C / I _B			f _T typ	Marking		
	V _{CES} *						max			min *			
	(V)	(V)	(mA)	(mW)	min/max	(mA)	(V)	(mV)	(mA)	(mA)	(MHz)	Standard	Reverse
BC 817-16	50*	45	500	350	100/250	100	1	700	500	50	200	6A	—
BC 817-25	50*	45	500	350	160/400	100	1	700	500	50	200	6B	—
BC 817-40	50*	45	500	350	250/630	100	1	700	500	50	200	6C	—
BC 818-16	30*	25	500	350	100/250	100	1	700	500	50	200	6E	—
BC 818-25	30*	25	500	350	160/400	100	1	700	500	50	200	6F	—
BC 818-40	30*	25	500	350	250/630	100	1	700	500	50	200	6G	—
BC 846 A	80	80	100	310	110/220	2	5	600	100	5	300	1A	1AR
BC 846 B	80	80	100	310	200/450	2	5	600	100	5	300	1B	1BR
BC 847 A	50	50	100	310	110/220	2	5	600	100	5	300	1E	1ER
BC 847 B	50	50	100	310	200/450	2	5	600	100	5	300	1F	1FR
BC 847 C	50	50	100	310	420/800	2	5	600	100	5	300	1G	1GR
BC 848 A	30	30	100	310	110/220	2	5	600	100	5	300	1J	1JR
BC 848 B	30	30	100	310	200/450	2	5	600	100	5	300	1K	1KR
BC 848 C	30	30	100	310	420/800	2	5	600	100	5	300	1L	1LR
BC 849 B	30	30	100	310	200/450	2	5	600	100	5	300	2B	2BR
BC 849 C	30	30	100	310	420/800	2	5	600	100	5	300	2C	2CR
BC 850 B	50	50	100	310	200/450	2	5	600	100	5	300	2F	2FR
BC 850 C	50	50	100	310	420/800	2	5	600	100	5	300	2G	2GR
BCF 33	32	32	100	300	420/800	2	5	250	10	5	300	D8	—
BCV 71	60	60	100	200	110/220	2	5	250	10	0.5	300	K7	K71
BCV 72	60	60	100	200	200/450	2	5	250	10	0.5	300	K8	K81
BCW 31	30	20	100	200	110/220	2	5	250	10	0.5	300	D1	D4
BCW 32	30	20	100	200	200/450	2	5	250	10	0.5	300	D2	D5
BCW 33	30	20	100	200	420/800	2	5	250	10	0.5	300	D3	D6
BCW 60 A	32*	32	200	310	120/220	2	5	550	50	1.25	125*	AA	AO
BCW 60 B	32*	32	200	310	180/310	2	5	550	50	1.25	125*	AB	AP
BCW 60 C	32*	32	200	310	250/460	2	5	550	50	1.25	125*	AC	AR
BCW 60 D	32*	32	200	310	380/630	2	5	550	50	1.25	125*	AD	AS
BCW 65 A	60*	32	800	360	100/250	100	1	700	500	50	100*	EA	ET
BCW 65 B	60*	32	800	360	160/400	100	1	700	500	50	100*	EB	EU
BCW 65 C	60*	32	800	360	250/600	100	1	700	500	50	100*	EC	EW
BCW 66 F	75*	45	800	360	100/250	100	1	700	500	50	100*	EF	EX
BCW 66 G	75*	45	800	360	160/400	100	1	700	500	50	100*	EG	EY
BCW 66 H	75*	45	800	360	250/600	100	1	700	500	50	100*	EH	EZ
BCW 71	50	45	100	200	110/220	2	5	250	10	0.5	300	K1	K4
BCW 72	50	45	100	200	200/450	2	5	250	10	0.5	300	K2	K5
BCW 81	50	45	100	200	420/800	2	5	250	10	0.5	300	K3	K31
BCX 19	50*	45	500	310	100/600	100	1	620	500	50	200	U1	U4
BCX 20	30*	25	500	310	100/600	100	1	620	500	50	200	U2	U5
BCX 70G	45*	45	200	310	120/220	2	5	550	50	1.25	125*	AG	AU
BCX 70H	45*	45	200	310	180/310	2	5	550	50	1.25	125*	AH	AW
BCX 70J	45*	45	200	310	250/460	2	5	550	50	1.25	125*	AJ	AX
BCX 70K	45*	45	200	310	380/630	2	5	550	50	1.25	125*	AK	AY
BSS 64	120	80	100	200	20/—	4	1	200	50	15	60*	U3	U6
SOA 05	60	60	500	350	50/—	100	1	250	100	10	100*	1HT	—
SOA 06	80	80	500	350	50/—	100	1	250	100	10	100*	1GT	—

GENERAL PURPOSE & INDUSTRIAL

PNP GENERAL PURPOSE TRANSISTORS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE(sat)} @ I _C / I _B			f _T typ	Marking	
	V _{CES} *										min *		
	(V)	(V)	(mA)	(mW)	min/max	(mA)	(V)	max	(mA)	(mA)	(MHz)	Standard	Reverse
BC 807-16	50*	45	500	350	100/250	100	1	700	500	50	200	5A	—
BC 807-25	50*	45	500	350	160/400	100	1	700	500	50	200	5B	—
BC 807-40	50*	45	500	350	250/630	100	1	700	500	50	200	5C	—
BC 808-16	30*	25	500	350	100/250	100	1	700	500	50	200	5E	—
BC 808-25	30*	25	500	350	160/400	100	1	700	500	50	200	5F	—
BC 808-40	30*	25	500	350	250/630	100	1	700	500	50	200	5G	—
BC 856 A	80	80	100	310	110/220	2	5	650	50	5	150	3A	3AR
BC 856 B	80	80	100	310	200/450	2	5	650	50	5	150	3B	3BR
BC 857 A	50	50	100	310	110/220	2	5	650	50	5	150	3E	3ER
BC 857 B	50	50	100	310	200/450	2	5	650	50	5	150	3F	3FR
BC 858 A	30	30	100	310	110/220	2	5	650	50	5	150	3J	3JR
BC 858 B	30	30	100	310	200/450	2	5	650	50	5	150	3K	3KR
BC 858 C	30	30	100	310	420/800	2	5	650	50	5	150	3L	3LR
BC 859 A	30	30	100	310	110/220	2	5	650	50	5	150	4A	4AR
BC 859 B	30	30	100	310	200/450	2	5	650	50	5	150	4B	4BR
BC 859 C	30	30	100	310	420/800	2	5	650	50	5	150	4C	4CR
BC 860 A	50	50	100	310	110/220	2	5	650	50	5	150	4E	4ER
BC 860 B	50	50	100	310	200/450	2	5	650	50	5	150	4F	4FR
BCF 30	32	32	100	300	120/260	2	5	300	10	0.5	150	C8	—
BCW29	30	20	100	200	120/260	2	5	300	10	0.5	150	C2	C5
BCW30	30	20	100	200	215/600	2	5	300	10	0.5	150	D1	D4
BCW 61 A	32*	32	200	310	120/220	2	5	550	50	1.25	180	BA	BO
BCW 61 B	32*	32	200	310	180/310	2	5	550	50	1.25	180	BB	BP
BCW 61 C	32*	32	200	310	250/460	2	5	550	50	1.25	180	BC	BR
BCW 61 D	32*	32	200	310	380/630	2	5	550	50	1.25	180	BD	BS
BCW 67 A	45*	32	800	360	100/250	100	1	700	500	50	100*	DA	DT
BCW 67 B	45*	32	800	360	160/400	100	1	700	500	50	100*	DB	DU
BCW 67 C	45*	32	800	360	250/630	100	1	700	500	50	100*	DC	DW
BCW 68 F	60*	45	800	360	100/250	100	1	700	500	50	100*	DF	DX
BCW 68 G	60*	45	800	360	160/400	100	1	700	500	50	100*	DG	DY
BCW 68 H	60*	45	800	360	250/630	100	1	700	500	50	100*	DH	DZ
BCW 69	50	45	100	200	120/260	2	5	300	10	0.5	150	H1	H4
BCW 70	50	45	100	200	215/500	2	5	300	10	0.5	150	H2	H5
BCW 89	60	60	100	200	120/260	2	5	300	10	0.5	150	H3	H31
BCX 17	50*	45	100	310	100/600	100	1	620	500	50	100	T1	T4
BCX 18	30*	25	100	310	100/600	100	1	620	500	50	100	T2	T5
BCX 71G	45*	45	200	310	120/220	2	5	550	50	1.25	180	BG	BU
BCX 71H	45*	45	200	310	180/310	2	5	550	50	1.25	180	BH	BW
BCX 71J	45*	45	200	310	250/460	2	5	550	50	1.25	180	BJ	BX
BCX 71K	45*	45	200	310	380/630	2	5	550	50	1.25	180	BK	BY
BSS 63	110	100	100	200	30/—	25	1	900	75	7.5	50	T3	T6
SOA 55	60	60	500	350	50/—	100	1	250	100	10	50*	2HT	—
SOA 56	80	80	500	350	50/—	100	1	250	100	10	50*	2GT	—

PNP DARLINGTONS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE(sat)} @ I _C / I _B			f _T typ	Marking	
	(V)	(V)	(mA)	(mW)	min/max	(mA)	(V)	max	(mA)	(mA)	(MHz)	Standard	Reverse
BCV 26	40	30	500	350	4000/—	500	5	1000	100	0.1	200	FD	—
BCV 46	80	60	500	350	2000/—	500	5	1000	100	0.1	200	FE	—

GENERAL PURPOSE & INDUSTRIAL

NPN DARLINGTONS

Type	V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_{tot} (mW)	h_{FE} @ I_C / V_{CE}			$V_{CE(sat)}$ @ I_C / I_B			f_T typ (MHz)	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)			
BCV 27	40	30	500	350	4000/—	500	5	1000	100	0.1	200	FF	—
BCV 47	80	60	500	350	2000/—	500	5	1000	100	0.1	200	FG	—
SO 517	40	30	400	350	30000/—	20	2	1000	100	0.1	220	N94	—

PNP SWITCHING TRANSISTORS

Type	V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_{tot} (mW)	h_{FE} @ I_C / V_{CE}			$V_{CE(sat)}$ @ I_C / I_B			f_T typ (MHz)	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)			
SO 2894	12	12	200	300	40/150	30	0.5	200	30	3	400	P06	—
SO 3905	40	40	200	300	50/150	10	1	400	50	5	200	P26	—
SO 3906	40	40	200	300	100/300	10	1	400	50	5	250	P25	—

NPN SWITCHING TRANSISTORS

Type	V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_{tot} (mW)	h_{FE} @ I_C / V_{CE}			$V_{CE(sat)}$ @ I_C / I_B			f_T min (MHz)	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)			
BSV 52	20	12	200	200	40/120	10	1	400	50	5	400	B2	B4
SO 2369	40	15	200	200	40/120	10	1	250	30	3	400	N11	011
SO 2369 A	40	15	200	200	40/120	10	0.35	500	100	10	500	N81	081
SO 3903	60	40	200	300	50/150	10	1	300	50	5	250	N72	—
SO 3904	60	40	200	300	100/300	10	1	300	50	5	300	N71	—

NPN MEDIUM CURRENT SWITCHING AND LOW FREQUENCY APPLICATION TRANSISTORS

Type	V_{CBO} (V)	V_{CEO} (V)	I_C (mA)	P_{tot} (mW)	h_{FE} @ I_C / V_{CE}			$V_{CE(sat)}$ @ I_C / I_B			f_T typ min * (MHz)	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)			
BSR 13	60	30	800	310	100/300	150	10	1600	500	50	250	U7	U71
BSR 14	75	40	800	310	100/300	150	10	1000	500	50	300	U8	U81
SO 1711	75	30	800	310	35/—	100	10	1500	150	15	70	N18	—
SO 1893	120	80	800	310	40/120	150	10	5000	150	15	50	N27	O27
SO 2221	60	30	800	310	40/120	150	10	400	150	15	250	N12	O12
SO 2221 A	75	40	800	310	40/120	150	10	300	150	15	250	N54	O54
SO 2222	60	30	800	310	100/300	150	10	400	150	15	250	N13	O13
SO 2222 A	75	40	800	310	100/300	150	10	300	150	15	250	N20	O20
SO 4401	60	40	600	350	100/300	150	1	400	150	15	250*	2X	—

GENERAL PURPOSE & INDUSTRIAL

PNP MEDIUM CURRENT SWITCHING AND LOW FREQUENCY APPLICATION TRANSISTORS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE(sat)} @ I _C / I _B			f _T typ min *	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)		Standard	Reverse
BSR 15	60	40	600	310	100/300	150	10	1600	500	50	200	T7	T71
BSR 16	60	60	600	310	100/300	150	10	1000	500	50	200	T8	T81
SO 2906	60	40	800	310	40/120	150	10	400	150	15	200	P01	J01
SO 2906 A	60	60	800	310	40/120	150	10	400	150	15	200	P12	J12
SO 2907	60	40	800	310	100/300	150	10	400	150	15	200	P05	J05
SO 2907 A	60	60	800	310	100/300	150	10	400	150	15	200	P03	J03
SO 4403	40	40	600	350	100/300	150	2	400	150	15	250*	2T	—

NPN HIGH VOLTAGE TRANSISTORS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE(sat)} @ I _C / I _B			f _T typ (MHz)	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)		Standard	Reverse
BFN 22	250	250	20	310	50/—	25	20	500	10	1	60	HB	—
SO 642	300	300	100	310	40/—	30	10	500	20	2	50	N91	O91
SO 5550	160	140	600	200	60/250	10	5	250	50	5	100	N79	O79
SO 5551	180	160	600	200	80/250	10	5	200	50	5	100	N80	O80

PNP HIGH VOLTAGE TRANSISTORS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE(sat)} @ I _C / I _B			f _T typ (MHz)	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)		Standard	Reverse
BFN 23	250	250	20	310	50/—	25	20	500	10	1	60	HC	—
SO 692	300	300	100	310	40/—	10	10	500	20	2	50	P39	J39
SO 5400	130	120	600	200	40/180	10	5	500	50	5	100	P32	J32
SO 5401	160	150	600	200	60/240	10	5	500	50	5	100	P33	J33

NPN LOW NOISE PREAMPLIFIER TRANSISTORS

Type	V _{CB0}	V _{CEO}	I _C	P _{tot}	h _{FE} @ I _C / V _{CE}			V _{CE(sat)} @ I _C / I _B			f _T typ min *	Marking	
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)		Standard	Reverse
SO 930	45	45	30	200	—/600	10	5	1000	10	0.5	200	N08	O08
SO 2484	60	60	50	200	—/800	10	5	350	1	0.1	200	N05	O05

GENERAL PURPOSE & INDUSTRIAL

SCHOTTKY DIODES

Type	Config.	Maximum ratings		Characteristics at 25°C							Marking	Package	
		V _{RM}	I _F	I _R @ V _R		V _F @ I _F		C @ V _R		Dynamic parameters			
		(V)	(mA)	max (μA)	(V)	min	max	max	(pF)				(V)
BAT 17	1	4	30	0.25	3	0.6	10	1	0	F < 7dB @ 1000MHz(1)	A3	SOT 23	
BAR 18	1	70	30	0.2	50	0.41	1	2	0	τ < 100ps @ 5mA(2)	D76		
BAR 42	1	30	100	0.5	25	0.4	10	7 §	1	t _{rr} < 5ns @ 10mA	D94		
★ BAR 43	1	30	100	0.5	25	0.26	0.33	2	7 §	1	t _{rr} < 5ns @ 10mA		D95
BAS 70-06	2	70	30	0.2	50	0.41	1	2	0	τ < 100ps @ 5mA(2)	D98		
★ BAR 43 A	2	30	100	0.5	25	0.26	0.33	2	7 §	1	t _{rr} < 5ns @ 10mA		DB1
BAS 70-05	3	70	80	0.2	50	0.41	1	2	0	τ < 100ps @ 5mA(2)	D97		
★ BAR 43 C	3	30	100	0.5	25	0.26	0.33	2	7 §	1	t _{rr} < 5ns @ 10mA		DB2
BAT 17 DS	4	4	30	0.25	3	0.6	10	1	0	F < 7 dB @ 1000MHz(1)	D85		
BAS 70-04	4	70	30	0.2	50	0.41	1	2	0	τ < 100ps @ 5mA(2)	D96		
★ BAR 43 S	4	30	100	0.5	25	0.26	0.33	2	7 §	1	t _{rr} < 5ns @ 10mA		DA5
(1) Mixer noise figure. (2) Minority carrier lifetime (Krakauer method). § Typical value. ★ Preferred device.													

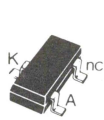
(1) Mixer noise figure. (2) Minority carrier lifetime (Krakauer method). § Typical value. ★ Preferred device.

VOLTAGE REGULATOR DIODES

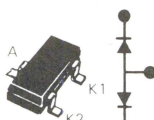
Type (1)	Config.	$P_{(tot)}$	V_{ZT}		r_{ZT} @ I_{ZT}		r_{ZK} @ I_{ZK}		α V_Z	I_R @ V_R	Marking	Package
			min	max	max	I_{ZT}	max	I_{ZK}				
		(mW)	(V)		(Ω)	(mA)	(Ω)	(mA)	typ (%/°C)	max (μ A) (V)		
BZX 84 C 2V4	5	350	2.28	2.56	85	5	600	1	-0.06	50 1	W 3	SOT 23
BZX 84 C 2V7		350	2.5	2.9	85	5	600	1	-0.06	10 1	W 4	
BZX 84 C 3V0		350	2.8	3.2	85	5	600	1	-0.06	4 1	W 5	
P BZX 84 C 3V3		350	3.1	3.5	85	5	600	1	-0.06	2 1	W 6	
P BZX 84 C 3V6		350	3.4	3.8	85	5	600	1	-0.06	2 1	W 7	
P BZX 84 C 3V9		350	3.7	4.1	85	5	600	1	-0.06	2 1	W 8	
P BZX 84 C 4V3		350	4.0	4.6	80	5	600	1	-0.05	1 1	W 9	
P BZX 84 C 4V7		350	4.4	5.0	80	5	500	1	-0.03	3 2	Z 1	
P BZX 84 C 5V1		350	4.8	5.4	60	5	480	1	+0.02	2 2	Z 2	
P BZX 84 C 5V6		350	5.2	6.0	40	5	400	1	+0.03	1 2	Z 3	
P BZX 84 C 6V2		350	5.8	6.6	10	5	150	1	+0.04	3 4	Z 4	
P BZX 84 C 6V8		350	6.4	7.2	15	5	80	1	+0.05	2 4	Z 5	
P BZX 84 C 7V5		350	7.0	7.9	15	5	80	1	+0.05	1 5	Z 6	
P BZX 84 C 8V2		350	7.7	8.7	15	5	80	1	+0.06	0.7 5	Z 7	
P BZX 84 C 9V1		350	8.5	9.6	15	5	100	1	+0.06	0.5 6	Z 8	
BZX 84 C 10		350	9.4	10.6	20	5	150	1	+0.07	0.2 7	Z 9	
BZX 84 C 11		350	10.4	11.6	20	5	150	1	+0.07	0.1 8	Y 1	
P BZX 84 C 12		350	11.4	12.1	25	5	150	1	+0.07	0.1 8	Y 2	
BZX 84 C 13		350	12.4	14.1	30	5	170	1	+0.08	0.1 8	Y 3	
P BZX 84 C 15		350	13.8	15.6	30	5	200	1	+0.08	0.05 0.7V _{ZT}	Y 4	
BZX 84 C 16		350	15.3	17.1	40	5	200	1	+0.08	0.05 0.7V _{ZT}	Y 5	
BZX 84 C 18		350	16.8	19.1	45	5	225	1	+0.08	0.05 0.7V _{ZT}	Y 6	
BZX 84 C 20		350	18.8	21.2	55	5	225	1	+0.08	0.05 0.7V _{ZT}	Y 7	
BZX 84 C 22		350	20.8	23.3	55	5	250	1	+0.09	0.05 0.7V _{ZT}	Y 8	
BZX 84 C 24		350	22.8	25.6	70	5	250	1	+0.09	0.05 0.7V _{ZT}	Y 9	
BZX 84 C 27		350	25.1	28.9	80	2	300	0.5	+0.09	0.05 0.7V _{ZT}	Y 10	
BZX 84 C 30		350	28.0	32.0	80	2	300	0.5	+0.09	0.05 0.7V _{ZT}	Y 11	
BZX 84 C 33		350	31.0	35.0	80	2	325	0.5	+0.09	0.05 0.7V _{ZT}	Y 12	
BZX 84 C 36		350	34.0	38.0	90	2	350	0.5	+0.09	0.05 0.7V _{ZT}	Y 13	
BZX 84 C 39		350	37.0	41.0	130	2	350	0.5	+0.09	0.05 0.7V _{ZT}	Y 14	
BZX 84 C 43		350	40.0	46.0	150	2	375	0.5	+0.09	0.05 0.7V _{ZT}	Y 15	
BZX 84 C 47		350	44.0	50.0	170	2	375	0.5	+0.09	0.05 0.7V _{ZT}	Y 16	
BZX 84 C 51		350	48.0	54.0	180	2	400	0.5	+0.09	0.05 0.7V _{ZT}	Y 17	
BZX 84 C 56		350	52.0	60.0	200	2	425	0.5	+0.09	0.05 0.7V _{ZT}	Y 18	
BZX 84 C 62		350	58.0	66.0	215	2	450	0.5	+0.09	0.05 0.7V _{ZT}	Y 19	
BZX 84 C 68		350	64.0	72.0	240	2	475	0.5	+0.09	0.05 0.7V _{ZT}	Y 20	
BZX 84 C 75		350	70.0	80.0	255	2	500	0.5	+0.09	0.05 0.7V _{ZT}	Y 21	

P: Preferred voltages.

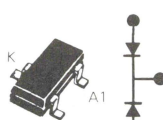
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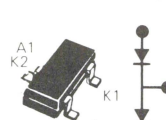
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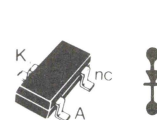
(2)



(3)



(4)



(5)

GENERAL PURPOSE & INDUSTRIAL

CMOS OP-AMPS*
SINGLE

Type	Description	Temperature range °C	Package
TS271ACD	Programmable supply current - low offset voltage	0 to 70	SO8
TS271ACDT	Programmable supply current - low offset voltage	0 to 70	SO8 tape
TS271AID	Programmable supply current - low offset voltage	-40 to 105	SO8
TS271AIDT	Programmable supply current - low offset voltage	-40 to 105	SO8 tape
TS271BCD	Programmable supply current - very low offset voltage	0 to 70	SO8
TS271BCDT	Programmable supply current - very low offset voltage	0 to 70	SO8 tape
TS271BID	Programmable supply current - very low offset voltage	-40 to 105	SO8
TS271BIDT	Programmable supply current - very low offset voltage	-40 to 105	SO8 tape
TS271CD	Programmable supply current - low cost	0 to 70	SO8
TS271CDT	Programmable supply current - low cost	0 to 70	SO8 tape
TS271ID	Programmable supply current - low cost	-40 to 105	SO8
TS271IDT	Programmable supply current - low cost	-40 to 105	SO8 tape

DUAL

Type	Description	Temperature range °C	Package
TS27L2ACD	Low supply current - low offset voltage	0 to 70	SO8
TS27L2ACDT	Low supply current - low offset voltage	0 to 70	SO8 tape
TS27L2AID	Low supply current - low offset voltage	-40 to 105	SO8
TS27L2AIDT	Low supply current - low offset voltage	-40 to 105	SO8 tape
TS27L2BCD	Low supply current - very low offset voltage	0 to 70	SO8
TS27L2BCDT	Low supply current - very low offset voltage	0 to 70	SO8 tape
TS27L2BID	Low supply current - very low offset voltage	-40 to 105	SO8
TS27L2BIDT	Low supply current - very low offset voltage	-40 to 105	SO8 tape
TS27L2CD	Low supply current - low cost	0 to 70	SO8
TS27L2CDT	Low supply current - low cost	0 to 70	SO8 tape
TS27L2ID	Low supply current - low cost	-40 to 105	SO8
TS27L2IDT	Low supply current - low cost	-40 to 105	SO8 tape
TS27M2ACD	Medium supply current - low offset voltage	0 to 70	SO8
TS27M2ACDT	Medium supply current - low offset voltage	0 to 70	SO8 tape
TS27M2AID	Medium supply current - low offset voltage	-40 to 105	SO8
TS27M2AIDT	Medium supply current - low offset voltage	-40 to 105	SO8 tape
TS27M2BCD	Medium supply current - very low offset voltage	0 to 70	SO8
TS27M2BCDT	Medium supply current - very low offset voltage	0 to 70	SO8 tape
TS27M2BID	Medium supply current - very low offset voltage	-40 to 105	SO8
TS27M2BIDT	Medium supply current - very low offset voltage	-40 to 105	SO8 tape
TS27M2CD	Medium supply current - low cost	0 to 70	SO8
TS27M2CDT	Medium supply current - low cost	0 to 70	SO8 tape
TS27M2ID	Medium supply current - low cost	-40 to 105	SO8
TS27M2IDT	Medium supply current - low cost	-40 to 105	SO8 tape
TS272ACD	High speed - low offset voltage	0 to 70	SO8
TS272ACDT	High speed - low offset voltage	0 to 70	SO8 tape
TS272AID	High speed - low offset voltage	-40 to 105	SO8
TS272AIDT	High speed - low offset voltage	-40 to 105	SO8 tape
TS272BCD	High speed - very low offset voltage	0 to 70	SO8
TS272BCDT	High speed - very low offset voltage	0 to 70	SO8 tape
TS272BID	High speed - very low offset voltage	-40 to 105	SO8
TS272BIDT	High speed - very low offset voltage	-40 to 105	SO8 tape
TS272CD	High speed - low cost	0 to 70	SO8
TS272CDT	High speed - low cost	0 to 70	SO8 tape
TS272ID	High speed - low cost	-40 to 105	SO8
TS272IDT	High speed - low cost	-40 to 105	SO8 tape

* All our CMOS operational amplifiers are designed to operate with single or dual supplies.
All are low consumption, high speed and ultra-stable behaviour.

GENERAL PURPOSE & INDUSTRIAL

CMOS OP-AMPS*

QUAD

Type	Description	Temperature range °C	Package
TS27L4ACD	Low supply current - low offset voltage	0 to 70	SO14
TS27L4ACDT	Low supply current - low offset voltage	0 to 70	SO14 tape
TS27L4AID	Low supply current - low offset voltage	-40 to 105	SO14
TS27L4AIDT	Low supply current - low offset voltage	-40 to 105	SO14 tape
TS27L4BCD	Low supply current - very low offset voltage	0 to 70	SO14
TS27L4BCDT	Low supply current - very low offset voltage	0 to 70	SO14 tape
TS27L4BID	Low supply current - very low offset voltage	-40 to 105	SO14
TS27L4BIDT	Low supply current - very low offset voltage	-40 to 105	SO14 tape
TS27L4CD	Low supply current - low cost	0 to 70	SO14
TS27L4CDT	Low supply current - low cost	0 to 70	SO14 tape
TS27L4ID	Low supply current - low cost	-40 to 105	SO14
TS27L4IDT	Low supply current - low cost	-40 to 105	SO14 tape
TS27M4ACD	Medium supply current - low offset voltage	0 to 70	SO14
TS27M4ACDT	Medium supply current - low offset voltage	0 to 70	SO14 tape
TS27M4AID	Medium supply current - low offset voltage	-40 to 105	SO14
TS27M4AIDT	Medium supply current - low offset voltage	-40 to 105	SO14 tape
TS27M4BCD	Medium supply current - very low offset voltage	0 to 70	SO14
TS27M4BCDT	Medium supply current - very low offset voltage	0 to 70	SO14 tape
TS27M4BID	Medium supply current - very low offset voltage	-40 to 105	SO14
TS27M4BIDT	Medium supply current - very low offset voltage	-40 to 105	SO14 tape
TS27M4CD	Medium supply current - low cost	0 to 70	SO14
TS27M4CDT	Medium supply current - low cost	0 to 70	SO14 tape
TS27M4ID	Medium supply current - low cost	-40 to 105	SO14
TS27M4IDT	Medium supply current - low cost	-40 to 105	SO14 tape
TS274ACD	High speed - low offset voltage	0 to 70	SO14
TS274ACDT	High speed - low offset voltage	0 to 70	SO14 tape
TS274AID	High speed - low offset voltage	-40 to 105	SO14
TS274AIDT	High speed - low offset voltage	-40 to 105	SO14 tape
TS274BCD	High speed - very low offset voltage	0 to 70	SO14
TS274BCDT	High speed - very low offset voltage	0 to 70	SO14 tape
TS274BID	High speed - very low offset voltage	-40 to 105	SO14
TS274BIDT	High speed - very low offset voltage	-40 to 105	SO14 tape
TS274CD	High speed - low cost	0 to 70	SO14
TS274CDT	High speed - low cost	0 to 70	SO14 tape
TS274ID	High speed - low cost	-40 to 105	SO14
TS274IDT	High speed - low cost	-40 to 105	SO14 tape

* All our CMOS operational amplifiers are designed to operate with single or dual supplies.

All are low consumption, high speed and ultra-stable behaviour.

J-FET OP-AMPS

SINGLE

Type	Description	Temperature range °C	Package
LF251D	Wide bandwidth	-40 to 105	SO8
LF251DT	Wide bandwidth	-40 to 105	SO8 tape
LF255D	High performance - low supply current	-40 to 105	SO8
LF255DT	High performance - low supply current	-40 to 105	SO8 tape
LF256D	High performance - wide band	-40 to 105	SO8
LF256DT	High performance - wide band	-40 to 105	SO8 tape
LF257D	High performance - wide band decompensated	-40 to 105	SO8
LF257DT	High performance - wide band decompensated	-40 to 105	SO8 tape
LF351D	Wide bandwidth	0 to 70	SO8
LF351DT	Wide bandwidth	0 to 70	SO8 tape
LF355D	High performance - low supply current	0 to 70	SO8
LF355DT	High performance - low supply current	0 to 70	SO8 tape
LF356D	High performance - wide band	0 to 70	SO8
LF356DT	High performance - wide band	0 to 70	SO8 tape
LF357D	High performance - wide band decompensated	0 to 70	SO8
LF357DT	High performance - wide band decompensated	0 to 70	SO8 tape
MC33001AD	General purpose - very low input offset voltage	-40 to 105	SO8

GENERAL PURPOSE & INDUSTRIAL

J-FET OP-AMPS
SINGLE (Continued)

Type	Description	Temperature range °C	Package
MC33001ADT	General purpose - very low input offset voltage	– 40 to 105	SO8 tape
MC33001BD	General purpose - low input offset voltage	– 40 to 105	SO8
MC33001BDT	General purpose - low input offset voltage	– 40 to 105	SO8 tape
MC33001D	General purpose	– 40 to 105	SO8
MC33001DT	General purpose	– 40 to 105	SO8 tape
MC34001AD	General purpose - very low input offset voltage	0 to 70	SO8
MC34001ADT	General purpose - very low input offset voltage	0 to 70	SO8 tape
MC34001BD	General purpose - low input offset voltage	0 to 70	SO8
MC34001BDT	General purpose - low input offset voltage	0 to 70	SO8 tape
MC34001D	General purpose	0 to 70	SO8
MC34001DT	General purpose	0 to 70	SO8 tape
TL061ACD	Low power - low input offset voltage	0 to 70	SO8
TL061ACDT	Low power - low input offset voltage	0 to 70	SO8 tape
TL061AID	Low power - low input offset voltage	– 40 to 105	SO8
TL061AIDT	Low power - low input offset voltage	– 40 to 105	SO8 tape
TL061BCD	Low power - very low input offset voltage	0 to 70	SO8
TL061BCDT	Low power - very low input offset voltage	0 to 70	SO8 tape
TL061BID	Low power - very low input offset voltage	– 40 to 105	SO8
TL061BIDT	Low power - very low input offset voltage	– 40 to 105	SO8 tape
TL061CD	Low power	0 to 70	SO8
TL061CDT	Low power	0 to 70	SO8 tape
TL061ID	Low power	– 40 to 105	SO8
TL061IDT	Low power	– 40 to 105	SO8 tape
TL071ACD	Low noise - low input offset voltage	0 to 70	SO8
TL071ACDT	Low noise - low input offset voltage	0 to 70	SO8 tape
TL071AID	Low noise - low input offset voltage	– 40 to 105	SO8
TL071AIDT	Low noise - low input offset voltage	– 40 to 105	SO8 tape
TL071BCD	Low noise - very low input offset voltage	0 to 70	SO8
TL071BCDT	Low noise - very low input offset voltage	0 to 70	SO8 tape
TL071BID	Low noise - very low input offset voltage	– 40 to 105	SO8
TL071BIDT	Low noise - very low input offset voltage	– 40 to 105	SO8 tape
TL071CD	Low noise	0 to 70	SO8
TL071CDT	Low noise	0 to 70	SO8 tape
TL071ID	Low noise	– 40 to 105	SO8
TL071IDT	Low noise	– 40 to 105	SO8 tape
TL081ACD	General purpose - low input offset voltage	0 to 70	SO8
TL081ACDT	General purpose - low input offset voltage	0 to 70	SO8 tape
TL081AID	General purpose - low input offset voltage	– 40 to 105	SO8
TL081AIDT	General purpose - low input offset voltage	– 40 to 105	SO8 tape
TL081BCD	General purpose - very low input offset voltage	0 to 70	SO8
TL081BCDT	General purpose - very low input offset voltage	0 to 70	SO8 tape
TL081BID	General purpose - very low input offset voltage	– 40 to 105	SO8
TL081BIDT	General purpose - very low input offset voltage	– 40 to 105	SO8 tape
TL081CD	General purpose	0 to 70	SO8
TL081CDT	General purpose	0 to 70	SO8 tape
TL081ID	General purpose	– 40 to 105	SO8
TL081IDT	General purpose	– 40 to 105	SO8 tape

DUAL

Type	Description	Temperature range °C	Package
LF253D	Wide bandwidth	– 40 to 105	SO8
LF253DT	Wide bandwidth	– 40 to 105	SO8 tape
LF353D	Wide bandwidth	0 to 70	SO8
LF353DT	Wide bandwidth	0 to 70	SO8 tape
MC33002AD	General purpose - very low input offset voltage	– 40 to 105	SO8
MC33002ADT	General purpose - very low input offset voltage	– 40 to 105	SO8 tape
MC33002BD	General purpose - low input offset voltage	– 40 to 105	SO8

GENERAL PURPOSE & INDUSTRIAL

J-FET OP-AMPS

DUAL (Continued)

Type	Description	Temperature range °C	Package
MC33002BDT	General purpose - low input offset voltage	-40 to 105	SO8 tape
MC33002D	General purpose	-40 to 105	SO8
MC33002DT	General purpose	-40 to 105	SO8 tape
MC34002AD	General purpose - very low input offset voltage	0 to 70	SO8
MC34002ADT	General purpose - very low input offset voltage	0 to 70	SO8 tape
MC34002BD	General purpose - low input offset voltage	0 to 70	SO8
MC34002BDT	General purpose - low input offset voltage	0 to 70	SO8 tape
MC34002D	General purpose	0 to 70	SO8
MC34002DT	General purpose	0 to 70	SO8 tape
TL062ACD	Low power - low input offset voltage	0 to 70	SO8
TL062ACDT	Low power - low input offset voltage	0 to 70	SO8 tape
TL062AID	Low power - low input offset voltage	-40 to 105	SO8
TL062AIDT	Low power - low input offset voltage	-40 to 105	SO8 tape
TL062BCD	Low power - very low input offset voltage	0 to 70	SO8
TL062BCDT	Low power - very low input offset voltage	0 to 70	SO8 tape
TL062BID	Low power - very low input offset voltage	-40 to 105	SO8
TL062BIDT	Low power - very low input offset voltage	-40 to 105	SO8 tape
TL062CD	Low power	0 to 70	SO8
TL062CDT	Low power	0 to 70	SO8 tape
TL062ID	Low power	-40 to 105	SO8
TL062IDT	Low power	-40 to 105	SO8 tape
TL072ACD	Low noise - low input offset voltage	0 to 70	SO8
TL072ACDT	Low noise - low input offset voltage	0 to 70	SO8 tape
TL072AID	Low noise - low input offset voltage	-40 to 105	SO8
TL072AIDT	Low noise - low input offset voltage	-40 to 105	SO8 tape
TL072BCD	Low noise - very low input offset voltage	0 to 70	SO8
TL072BCDT	Low noise - very low input offset voltage	0 to 70	SO8 tape
TL072BID	Low noise - very low input offset voltage	-40 to 105	SO8
TL072BIDT	Low noise - very low input offset voltage	-40 to 105	SO8 tape
TL072CD	Low noise	0 to 70	SO8
TL072CDT	Low noise	0 to 70	SO8 tape
TL072ID	Low noise	-40 to 105	SO8
TL072IDT	Low noise	-40 to 105	SO8 tape
TL082ACD	General purpose - low input offset voltage	0 to 70	SO8
TL082ACDT	General purpose - low input offset voltage	0 to 70	SO8 tape
TL082AID	General purpose - low input offset voltage	-40 to 105	SO8
TL082AIDT	General purpose - low input offset voltage	-40 to 105	SO8 tape
TL082BCD	General purpose - very low input offset voltage	0 to 70	SO8
TL082BCDT	General purpose - very low input offset voltage	0 to 70	SO8 tape
TL082BID	General purpose - very low input offset voltage	-40 to 105	SO8
TL082BIDT	General purpose - very low input offset voltage	-40 to 105	SO8 tape
TL082CD	General purpose	0 to 70	SO8
TL082CDT	General purpose	0 to 70	SO8 tape
TL082ID	General purpose	-40 to 105	SO8
TL082IDT	General purpose	-40 to 105	SO8 tape

QUAD

Type	Description	Temperature range °C	Package
MC33004AD	General purpose - very low input offset voltage	-40 to 105	SO14
MC33004ADT	General purpose - very low input offset voltage	-40 to 105	SO14 tape
MC33004BD	General purpose - low input offset voltage	-40 to 105	SO14
MC33004BDT	General purpose - low input offset voltage	-40 to 105	SO14 tape
MC33004D	General purpose	-40 to 105	SO14
MC33004DT	General purpose	-40 to 105	SO14 tape
MC34004AD	General purpose - very low input offset voltage	0 to 70	SO14
MC34004ADT	General purpose - very low input offset voltage	0 to 70	SO14 tape
MC34004BD	General purpose - low input offset voltage	0 to 70	SO14

GENERAL PURPOSE & INDUSTRIAL

J-FET OP-AMPS

QUAD (Continued)

Type	Description	Temperature range °C	Package
MC34004BDT	General purpose - low input offset voltage	0 to 70	SO14 tape
MC34004D	General purpose	0 to 70	SO14
MC34004DT	General purpose	0 to 70	SO14 tape
TL064ACD	Low power - low input offset voltage	0 to 70	SO14
TL064ACDT	Low power - low input offset voltage	0 to 70	SO14 tape
TL064AID	Low power - low input offset voltage	-40 to 105	SO14
TL064AIDT	Low power - low input offset voltage	-40 to 105	SO14 tape
TL064BCD	Low power - very low input offset voltage	0 to 70	SO14
TL064BCDT	Low power - very low input offset voltage	0 to 70	SO14 tape
TL064BID	Low power - very low input offset voltage	-40 to 105	SO14
TL064BIDT	Low power - very low input offset voltage	-40 to 105	SO14 tape
TL064CD	Low power	0 to 70	SO14
TL064CDT	Low power	0 to 70	SO14 tape
TL064ID	Low power	-40 to 105	SO14
TL064IDT	Low power	-40 to 105	SO14 tape
TL074ACD	Low noise - low input offset voltage	0 to 70	SO14
TL074ACDT	Low noise - low input offset voltage	0 to 70	SO14 tape
TL074AID	Low noise - low input offset voltage	-40 to 105	SO14
TL074AIDT	Low noise - low input offset voltage	-40 to 105	SO14 tape
TL074BCD	Low noise - very low input offset voltage	0 to 70	SO14
TL074BCDT	Low noise - very low input offset voltage	0 to 70	SO14 tape
TL074BID	Low noise - very low input offset voltage	-40 to 105	SO14
TL074BIDT	Low noise - very low input offset voltage	-40 to 105	SO14 tape
TL074CD	Low noise	0 to 70	SO14
TL074CDT	Low noise	0 to 70	SO14 tape
TL074ID	Low noise	-40 to 105	SO14
TL074IDT	Low noise	-40 to 105	SO14 tape
TL084ACD	General purpose - low input offset voltage	0 to 70	SO14
TL084ACDT	General purpose - low input offset voltage	0 to 70	SO14 tape
TL084AID	General purpose - low input offset voltage	-40 to 105	SO14
TL084AIDT	General purpose - low input offset voltage	-40 to 105	SO14 tape
TL084BCD	General purpose - very low input offset voltage	0 to 70	SO14
TL084BCDT	General purpose - very low input offset voltage	0 to 70	SO14 tape
TL084BID	General purpose - very low input offset voltage	-40 to 105	SO14
TL084BIDT	General purpose - very low input offset voltage	-40 to 105	SO14 tape
TL084CD	General purpose	0 to 70	SO14
TL084CDT	General purpose	0 to 70	SO14 tape
TL084ID	General purpose	-40 to 105	SO14
TL084IDT	General purpose	-40 to 105	SO14 tape

BIPOLAR OP-AMPS

SINGLE

Type	Description	Temperature range °C	Package
LM101AD	Low offset - external frequency compensation	-55 to 125	SO8
LM101ADT	Low offset - external frequency compensation	-55 to 125	SO8 tape
LM201AD	Low offset - external frequency compensation	-40 to 105	SO8
LM201ADT	Low offset - external frequency compensation	-40 to 105	SO8 tape
LM208AD	Precision - low input current - low input offset voltage	-40 to 105	SO8
LM208ADT	Precision - low input current - low input offset voltage	-40 to 105	SO8 tape
LM208D	Precision - low input current	-40 to 105	SO8
LM208DT	Precision - low input current	-40 to 105	SO8 tape
LM218D	High speed - wide bandwidth - high slew rate	-40 to 105	SO8
LM218DT	High speed - wide bandwidth - high slew rate	-40 to 105	SO8 tape
LM301AD	Low offset - external frequency compensation	0 to 70	SO8
LM301ADT	Low offset - external frequency compensation	0 to 70	SO8 tape
LM308AD	Precision - low input current - low input offset voltage	0 to 70	SO8
LM308ADT	Precision - low input current - low input offset voltage	0 to 70	SO8 tape
LM308D	Precision - low input current	0 to 70	SO8

GENERAL PURPOSE & INDUSTRIAL

BIPOLAR OP-AMPS

SINGLE (Continued)

Type	Description	Temperature range °C	Package
LM308DT	Precision - low input current	0 to 70	SO8 tape
LM318D	High speed - wide bandwidth - high slew rate	0 to 70	SO8
LM318DT	High speed - wide bandwidth - high slew rate	0 to 70	SO8 tape
UA741CD	General purpose - internal frequency compensation	0 to 70	SO8
UA741CDT	General purpose - internal frequency compensation	0 to 70	SO8 tape
UA741ID	General purpose - internal frequency compensation	-40 to 105	SO8
UA741IDT	General purpose - internal frequency compensation	-40 to 105	SO8 tape
UA748CD	Precision - low offset	0 to 70	SO8
UA748CDT	Precision - low offset	0 to 70	SO8 tape
UA748ID	Precision - low offset	-40 to 105	SO8
UA748IDT	Precision - low offset	-40 to 105	SO8 tape
UA776CD	Programmable - high input impedance	0 to 70	SO8
UA776CDT	Programmable - high input impedance	0 to 70	SO8 tape
UA776ID	Programmable - high input impedance	-40 to 105	SO8
UA776IDT	Programmable - high input impedance	-40 to 105	SO8 tape

DUAL

Type	Description	Temperature range °C	Package
LM258D	Low power - single power supply	-40 to 105	SO8
LM258DT	Low power - single power supply	-40 to 105	SO8 tape
LM2904D	Low power - single power supply - automotive	-40 to 105	SO8
LM2904DT	Low power - single power supply - automotive	-40 to 105	SO8 tape
LM358AD	Low power - single power supply - low input offset voltage	0 to 70	SO8
LM358ADT	Low power - single power supply - low input offset voltage	0 to 70	SO8 tape
LM358D	Low power - single power supply	0 to 70	SO8
LM358DT	Low power - single power supply	0 to 70	SO8 tape
MC1458D	General purpose - internal frequency compensation	0 to 70	SO8
MC1458DT	General purpose - internal frequency compensation	0 to 70	SO8 tape
MC1458ID	General purpose - internal frequency compensation	-40 to 105	SO8
MC1458IDT	General purpose - internal frequency compensation	-40 to 105	SO8 tape
MC4558CD	Wideband - low power	0 to 70	SO8
MC4558CDT	Wideband - low power	0 to 70	SO8 tape
MC4558ID	Wideband - low power	-40 to 105	SO8
MC4558IDT	Wideband - low power	-40 to 105	SO8 tape
TEB1033D	Low distortion & noise - high channel separation	0 to 70	SO8
TEB1033DT	Low distortion & noise - high channel separation	0 to 70	SO8 tape
TEF1033D	Low distortion & noise - high channel separation	-40 to 105	SO8
TEF1033DT	Low distortion & noise - high channel separation	-40 to 105	SO8 tape

QUAD

Type	Description	Temperature range °C	Package
LM124D	General purpose - single power supply	-55 to 125	SO14
LM124DT	General purpose - single power supply	-55 to 125	SO14 tape
LM148D	Quad 741 - low supply current drain	-55 to 125	SO14
LM148DT	Quad 741 - low supply current drain	-55 to 125	SO14 tape
LM224AD	General purpose - single power supply - low input offset voltage	-40 to 105	SO14
LM224ADT	General purpose - single power supply - low input offset voltage	-40 to 105	SO14 tape
LM224D	General purpose - single power supply	-40 to 105	SO14
LM224DT	General purpose - single power supply	-40 to 105	SO14 tape
LM246D	Programmable - wide power supply range	-40 to 105	SO16
LM246DT	Programmable - wide power supply range	-40 to 105	SO16 tape
LM248D	Quad 741 - low supply current drain	-40 to 105	SO14
LM248DT	Quad 741 - low supply current drain	-40 to 105	SO14 tape
LM2902D	Low power - single power supply - automotive	-40 to 105	SO14
LM2902DT	Low power - single power supply - automotive	-40 to 105	SO14 tape
LM324AD	General purpose - single power supply - low input offset voltage	0 to 70	SO14

GENERAL PURPOSE & INDUSTRIAL

BIPOLAR OP-AMPS

QUAD (Continued)

Type	Description	Temperature range °C	Package
LM324ADT	General purpose - single power supply - low input offset voltage	0 to 70	SO14 tape
LM324D	General purpose - single power supply	0 to 70	SO14
LM324DT	General purpose - single power supply	0 to 70	SO14 tape
LM346D	Programmable - wide power supply range	0 to 70	SO16
LM346DT	Programmable - wide power supply range	0 to 70	SO16 tape
LM348D	Quad 741 - low supply current drain	0 to 70	SO14
LM348DT	Quad 741 - low supply current drain	0 to 70	SO14 tape
MC3303D	Single power supply - class AB output stage	-40 to 105	SO14
MC3303DT	Single power supply - class AB output stage	-40 to 105	SO14 tape
MC3403D	Single power supply - class AB output stage	0 to 70	SO14
MC3403DT	Single power supply - class AB output stage	0 to 70	SO14 tape
TEB4033D	Low distortion & noise - high channel separation	0 to 70	SO14
TEB4033DT	Low distortion & noise - high channel separation	0 to 70	SO14 tape
TEF4033D	Low distortion & noise - high channel separation	-40 to 105	SO14
TEF4033DT	Low distortion & noise - high channel separation	-40 to 105	SO14 tape

COMPARATORS

SINGLE

Type	Description	Temperature range °C	Package
LM111D	Low input current - single power supply voltage	-55 to 125	SO8
LM111DT	Low input current - single power supply voltage	-55 to 125	SO8 tape
LM211D	Low input current - single power supply voltage	-40 to 105	SO8
LM211DT	Low input current - single power supply voltage	-40 to 105	SO8 tape
LM311D	Low input current - single power supply voltage	0 to 70	SO8
LM311DT	Low input current - single power supply voltage	0 to 70	SO8 tape

DUAL

Type	Description	Temperature range °C	Package
LM219D	High speed - single supply operation	-40 to 105	SO14
LM219DT	High speed - single supply operation	-40 to 105	SO14 tape
LM2903D	Low power - low offset voltage - automotive	-40 to 105	SO8
LM2903DT	Low power - low offset voltage - automotive	-40 to 105	SO8 tape
LM293D	Low power - low offset voltage	-40 to 105	SO8
LM293DT	Low power - low offset voltage	-40 to 105	SO8 tape
LM319D	High speed - single supply operation	0 to 70	SO14
LM319DT	High speed - single supply operation	0 to 70	SO14 tape
LM393AD	Low power - low offset voltage	0 to 70	SO8
LM393ADT	Low power - low offset voltage	0 to 70	SO8 tape
LM393D	Low power - low offset voltage	0 to 70	SO8
LM393DT	Low power - low offset voltage	0 to 70	SO8 tape

QUAD

Type	Description	Temperature range °C	Package
LM239AD	Low power - low offset voltage	-40 to 105	SO14
LM239ADT	Low power - low offset voltage	-40 to 105	SO14 tape
LM239D	Low power - low offset voltage	-40 to 105	SO14
LM239DT	Low power - low offset voltage	-40 to 105	SO14 tape
LM2901D	Low power - low offset voltage - automotive	-40 to 105	SO14
LM2901DT	Low power - low offset voltage - automotive	-40 to 105	SO14 tape
LM339AD	Low power - low offset voltage	0 to 70	SO14
LM339ADT	Low power - low offset voltage	0 to 70	SO14 tape
LM339D	Low power - low offset voltage	0 to 70	SO14
LM339DT	Low power - low offset voltage	0 to 70	SO14 tape
LM3302D	Low power - low offset voltage	-40 to 105	SO14
LM3302DT	Low power - low offset voltage	-40 to 105	SO14 tape

GENERAL PURPOSE & INDUSTRIAL

VOLTAGE REGULATORS

Type	Description	Temperature range °C	Package
LM723CD1	Adjustable - 3 - 37 V precision positive regulator	0 to 70	SO14
L78M05CS	Positive - 5 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M06CS	Positive - 6 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M08CS	Positive - 8 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M12CS	Positive - 12 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M15CS	Positive - 15 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M18CS	Positive - 18 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M20CS	Positive - 20 V - 0.5 A - regulator 4 %	0 to 125	SOT194
L78M24CS	Positive - 24 V - 0.5 A - regulator 4 %	0 to 125	SOT194

OFF-LINE SWITCHING

Type	Description	Package
SG2524P	Regulating pulse with modulator (from -25°C to +85°C)	SO16
SG2525AP	Regulating pulse with modulator (from -25°C to +85°C)	SO16
SG2527AP	Regulating pulse with modulator (from -25°C to +85°C)	SO16
SG3524P	Regulating pulse with modulator (from 0 to +70°C)	SO16
SG3525AP	Regulating pulse with modulator (from 0 to +70°C)	SO16
SG3527AP	Regulating pulse with modulator (from 0 to +70°C)	SO16
UC2524AD	Regulating pulse with modulator (from -25°C to +85°C)	SO16
UC2842D	Regulating pulse with modulator (from -25°C to +85°C)	SO8/14
UC2843D	Regulating pulse with modulator (from -25°C to +85°C)	SO8/14
UC2844D	Regulating pulse with modulator (from -25°C to +85°C)	SO8/14
UC2845D	Regulating pulse with modulator (from -25°C to +85°C)	SO8/14
UC3524AD	Regulating pulse with modulator (from 0 to +70°C)	SO16P
UC3842D	Regulating pulse with modulator (from 0 to +70°C)	SO8/14
UC3843D	Regulating pulse with modulator (from 0 to +70°C)	SO8/14
UC3844D	Regulating pulse with modulator (from 0 to +70°C)	SO8/14
UC3845D	Regulating pulse with modulator (from 0 to +70°C)	SO8/14

POWER CONTROLLERS - DRIVERS

Type	Description	Package
AM6012AD,D	12-bit high speed multiplying D/A converters	SO20
DAC0806/07/08D	8-bit D/A converters	SO16
ESM1600BFP	Industrial line driver	SO16
ESM1602BFP	Industrial line driver	SO16
L6201	0.3 Ω DMOS full bridge driver	SO20
L6217/A	Stepper motor driver	PLCC44
L6235	R-DAT brushless DC motor driver	PLCC20
L6236	Bidirectional R-DAT brushless DC motor driver	PLCC20
L6604	Memory card interface	PLCC28
M8438AC	32 segment static LCD driver	PLCC44
MC1488D	RS232C quad line receiver	SO14
MC1489AD,D	Quad line receivers	SO14
TDE1607FP	Intelligent power switch - $V_{CC} = 36\text{ V}$, $I_{OUT} = 0.3\text{ A}$	SO14
TDE1647FP	Intelligent power switch - $V_{CC} = 45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	SO14
TDE1737FP	Intelligent power switch - $V_{CC} = -45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	SO14
TDE1747FP	Intelligent power switch - $V_{CC} = 45\text{ V}$, $I_{OUT} = 0.5\text{ A}$	SO14
TDF1737	Relay and lamp driver	SO14
ULN2001D	Seven darlington arrays	SO16
ULN2002D	Seven darlington arrays	SO16
ULN2003D	Seven darlington arrays	SO16
ULN2004D	Seven darlington arrays	SO16

BIPOLAR TIMERS

Type	Description	Temperature range °C	Package
NE555D	Single - Astable or monostable operation	0 to 70	SO8
NE555DT	Single - Astable or monostable operation	0 to 70	SO8 tape
NE556D	Dual - Two independant 555 timing circuits	0 to 70	SO14
NE556DT	Dual - Two independant 555 timing circuits	0 to 70	SO14 tape
SA555D	Single - Astable or monostable operation	-40 to 105	SO8
SA555DT	Single - Astable or monostable operation	-40 to 105	SO8 tape
SA556D	Dual - Two independant 555 timing circuits	-40 to 105	SO14
SA556DT	Dual - Two independant 555 timing circuits	-40 to 105	SO14 tape

GENERAL PURPOSE & INDUSTRIAL

DEDICATED FUNCTIONS

Type	Description	Temperature range °C	Package
LM236AD	2.5 V voltage reference - precision	–25 to 85	SO8
LM236ADT	2.5 V voltage reference - precision	–25 to 85	SO8 tape
LM236D	2.5 V voltage reference	–25 to 85	SO8
LM236DT	2.5 V voltage reference	–25 to 85	SO8 tape
LM335AD	Precision temperature sensor - high accuracy	0 to 70	SO8
LM335ADT	Precision temperature sensor - high accuracy	0 to 70	SO8 tape
LM335D	Precision temperature sensor	0 to 70	SO8
LM335DT	Precision temperature sensor	0 to 70	SO8 tape
LM336BD	2.5 V voltage reference - precision	0 to 70	SO8
LM336BDT	2.5 V voltage reference - precision	0 to 70	SO8 tape
LM336D	2.5 V voltage reference	0 to 70	SO8
LM336DT	2.5 V voltage reference	0 to 70	SO8 tape
TDA0159AFP	Proximity detector	0 to 70	SO8
TDA0161FP	Proximity detector	–40 to 100	SO8
TDE0160FP	Proximity detector	–25 to 85	SO14
TL7700ACD	Supply voltage supervisor	0 to 70	SO8
TL7700AID	Supply voltage supervisor	–25 to 85	SO8

STANDARD LOGIC CMOS 4000B SERIES

Type	Description	Package
HCF4000BM1	Dual 3-input NOR gate plus inverter	SO14
HCF4001BM1	Quad 2-input NOR gate	SO14
HCF4002BM1	Dual 4-input NOR gate	SO14
HCF4006BM1	18-stage static shift register	SO14
HCF4007UBM1	Dual complementary pair plus inverter	SO14
HCF4008BM1	4 bit full adder	SO16
HCF4009UBM1	Hex buffer/converters inverting	SO16
HCF4010BM1	Hex buffer/converters non inverting	SO16
HCF4011BM1	Quad 2-input NAND gate	SO14
HCF4012BM1	Dual 4-input NAND gate	SO14
HCF4013BM1	Dual D flip-flop	SO14
HCF4014BM1	8-stage static syncr. shift register	SO16
HCF4015BM1	Dual 4-stage static shift register	SO16
HCF4016BM1	Quad Bilateral Switch	SO14
HCF4017BM1	Decade Counter/Divider	SO16
HCF4018BM1	Presettable Divide-by-«N» Counter	SO16
HCF4019BM1	Quad AND/OR Select Gate	SO16
HCF4020BM1	14-Stage Binary/Ripple Counter	SO16
HCF4021BM1	8-Stage Static Shift Register	SO16
HCF4022BM1	Divide-by-8 Counter/Divider	SO16
HCF4023BM1	Triple 3-Input NAND Gate	SO14
HCF4024BM1	7-Stage Binary/Ripple Counter	SO14
HCF4025BM1	Triple 3-Input NOR Gate	SO14
HCF4026BM1	Decade Coun./Div. 7-Segm. Display Driv.	SO16
HCF4027BM1	Dual J-K Master-Slave Flip-Flop	SO16
HCF4028BM1	BCD-to Decimal Decoder	SO16
HCF4029BM1	Presettable Up/Down Counter	SO16
HCF4030BM1	Quad Exclusive OR Gate	SO14
HCF4032BM1	Triple Serial Adder	SO16
HCF4033BM1	Decade Coun./Div. 7-Segm. Display Driv.	SO16
HCF4034BM1	8-Stage Static Bidirectional Bus Register	SO24
HCF4035BM1	4-Stage Parallel I/O Shift Register	SO16
HCF4038BM1	Triple Serial Adder	SO16
HCF4040BM1	12-Stage Binary/Ripple Counter	SO16
HCF4041UBM1	Quad True/Complement Buffer	SO14
HCF4042BM1	Quad Clocked D Latch	SO16
HCF4043BM1	Quad 3-State NOR R/S Latch	SO16

GENERAL PURPOSE & INDUSTRIAL

STANDARD LOGIC

CMOS 4000B SERIES (Continued)

Type	Description	Package
HCF4044BM1	Quad 3-State NAND R/S Latch	SO16
HCF4045BM1	21-Stage Counter	SO16
HCF4047BM1	Monostable/Astable Multivibrator	SO14
HCF4048BM1	Multifunction Expandable 8-Input Gate	SO16
HCF4049UBM1	Hex Inverting Buffer/Converter	SO16
HCF4050BM1	Hex Non Inverting Buffer/Converter	SO16
HCF4051BM1	Single 8-Channel Analog Multipl./Demult.	SO16
HCF4052BM1	Different. 4-Channel Analog Multipl./Dem	SO16
HCF4053BM1	Triple 2-Channel Analog Multiplexer/Dem.	SO16
HCF4054BM1	4-Segment Display Driver	SO16
HCF4055BM1	BCD to 7-Segment Decoder/Driver	SO16
HCF4056BM1	BCD to 7-Segment Decoder/Driver	SO16
HCF4060BM1	14-Stage Counter/Divider AND Oscillator	SO16
HCF4063BM1	4-Bit Magnitude Comparator	SO16
HCF4066BM1	Quad Bilateral Switch	SO14
HCF4067BM1	Single 16-Channel Analog Multiplexer/Dem.	SO24
HCF4068BM1	8-Input NAND/AND Gate	SO14
HCF4069UBM1	Hex Inverter	SO14
HCF4070BM1	Quad Ex-Or Gate	SO14
HCF4071BM1	Quad 2-Input OR Gate	SO14
HCF4072BM1	Dual 4-Input OR Gate	SO14
HCF4073BM1	Triple 3-Input AND Gate	SO14
HCF4075BM1	Triple 3-Input OR Gate	SO14
HCF4076BM1	4-Bit D-Type Register	SO16
HCF4077BM1	Quad Ex-NOR Gate	SO14
HCF4078BM1	8-Input NOR/OR Gate	SO14
HCF4081BM1	Quad 2-Input AND Gate	SO14
HCF4082BM1	Dual 4-Input AND Gate	SO14
HCF4085BM1	Dual 2-Wide 2-Input AND-OR- Inverter Gate	SO14
HCF4086BM1	Expand. 4-Wide 2-Input AND-OR- Inver. Gate	SO14
HCF4093BM1	Quad 2-Input NAND Schmitt Trigger	SO14
HCF4094BM1	8-Stage Shift-AND-Store Bus Register	SO16
HCF4095BM1	Gated J-K Master-Slave Flip-Flop	SO14
HCF4096BM1	Gated J-K Master-Slave Flip-Flop	SO14
HCF4097BM1	Different. 8-Channel Analog Multipl./Dem.	SO24
HCF4098BM1	Dual Monostable multivibrator	SO16
HCF4099BM1	8-Bit Addressable Latch	SO16
HCF4502BM1	Strobed Hex Inverter/Buffer	SO16
HCF4503BM1	Hex Buffer (3-State non-Inverter)	SO16
HCF4508BM1	Dual 4-Bit Latch (3-State Outputs)	SO24
HCF4511BM1	BCD to 7 Segment Latch-Decoder/Driver	SO16
HCF4512BM1	8-Channel Data Selec. With 3-State Output	SO16
HCF4514BM1	4-Bit Latch/4-to-16 Line Dec. (Out. High)	SO24
HCF4515BM1	4-Bit Latch/4-to-16 Line Dec. (Out. Low)	SO24
HCF4516BM1	Presetable 4-Bit Binary Up/Down Counter	SO16
HCF4518BM1	Dual BCD Up Counter	SO16
HCF4520BM1	Dual Binary Up Counter	SO16
HCF4532BM1	8-Input Priority Encoder	SO16
HCF4538BM1	Dual Precision Monostable Multivibrator	SO16
HCF4541BM1	Programmable Timer	SO14
HCF4555BM1	Dual 1-of-4 Decoder/Demultipl. (Out. High)	SO16
HCF4556BM1	Dual 1-of-4 Decoder/Demultipl. (Out. Low)	SO16
HCF4585BM1	4-Bit Magnitude Comparator	SO16
HCF40100BM1	32-Stage Static Left/Right Shift Register	SO16
HCF40101BM1	9-Bit Parity Generator/Checker	SO14
HCF40106BM1	Hex Schmitt Trigger	SO14
HCF40107BM1	Dual 2-Input NAND Buffer/Driver	SO 8
HCF40108BM1	4 × 4 Multiport Register	SO24
HCF40109BM1	Quad Low-to-High Voltage Level Shifter	SO16
HCF40160BM1	Decade Counter/Asynchronous Clear	SO16
HCF40161BM1	Binary Counter/Asynchronous Clear	SO16
HCF40162BM1	Decade Counter/Synchronous Clear	SO16
HCF40163BM1	Binary Counter/Synchronous Clear	SO16
HCF40174BM1	Hex «D» Type Flip-Flop	SO16
HCF40181BM1	4-Bit Arithmetic Logic Unit	SO24
HCF40182BM1	Look-Ahead Carry Generator	SO16
HCF40192BM1	Presetable 4-Bit BCD Up/Down Counter	SO16
HCF40193BM1	Presetable 4-Bit Binary Up/Down Counter	SO16
HCF40208BM1	4 × 4 Multiport Register	SO24
HCF40257BM1	Quad 2-line-to-1-Line Data Selector/Mult.	SO16

GENERAL PURPOSE & INDUSTRIAL

 STANDARD LOGIC
 HS - C²MOS LOGIC - M74HC SERIES

Type	Description	Package
M74HC00M1	Quad 2-Input NAND Gate	SO14
M74HC02M1	Quad 2-Input NOR Gate	SO14
M74HC03M1	Quad 2-Input NAND (open drain)	SO14
M74HC04M1	Hex Inverter	SO14
M74HCT04M1	Hex Inverter	SO14
M74HCU04M1	Hex Inverter (Single stage)	SO14
M74HC08M1	Quad 2-Input AND Gate	SO14
M74HC10M1	Triple 3-Input NAND Gate	SO14
M74HC11M1	Triple 3-Input AND Gate	SO14
M74HC14M1	Hex schmitt inverter	SO14
M74HC20M1	Dual 4-Input NAND Gate	SO14
M74HC21M1	Dual 4-Input AND Gate	SO14
M74HC27M1	Triple 3-Input NOR Gate	SO14
M74HC30M1	8-Input NAND Gate	SO14
M74HC32M1	Quad 2-Input OR Gate	SO14
M74HC42M1	BCD to Decimal Decoder	SO16
M74HC51M1	Dual 2-Wide 2-Inp/3-Inp. AND-OR Inv.Gate	SO14
M74HC73M1	Dual J-K Flip-Flop with clear	SO14
M74HC74M1	Dual D-type Flip-Flop with preset and clear	SO14
M74HC75M1	4-Bit D-type latch	SO16
M74HC76M1	Dual J-K Flip-Flop with preset and Clear	SO16
M74HC77M1	4-Bit D-type latch	SO14
M74HC85M1	4-Bit magnitude comparator	SO16
M74HC86M1	Quad exclusive OR Gate	SO14
M74HC107M1	Dual J-K Flip-Flop with clear	SO14
M74HC109M1	Dual J-R Flip-Flop with Preset and Clear	SO16
M74HC112M1	Dual J-K Flip-Flop with Preset and Clear	SO16
M74HC113M1	Dual J-K Flip-Flop with Preset	SO14
M74HC123M1	Dual Retrigger. monost. mult. with clear	SO16
M74HC125M1	Quad bus buffer (3-State)	SO14
M74HC126M1	Quad bus buffer (3-State)	SO14
M74HC131M1	3 to 8 line decoder latch	SO16
M74HC132M1	Quad 2-Input schmitt NAND gate	SO14
M74HC133M1	13 Input NAND Gate	SO16
M74HC137M1	3 to 8 line decoder latch (Inv.)	SO16
M74HCT137M1	3 to 8 line decoder latch (Inv.)	SO16
M74HC138M1	3 to 8 line decoder (Inv.)	SO16
M74HCT138M1	3 to 8 line decoder (Inv.)	SO16
M74HC139M1	Dual 2 to 4 line decoder/demultiplexer	SO16
M74HC147M1	10 to 4 line priority encoder	SO16
M74HC148M1	8 to 3 line priority encoder	SO16
M74HC151M1	8-Channel multiplexer	SO16
M74HC153M1	Dual 4-Channel multiplexer	SO16
M74HC154M1	4 to 16 line decoder/demultiplexer	SO24
M74HC155M1	Dual 2 to 4 line dec./ 3 to 8 line dec.	SO16
M74HC157M1	Quad 2-Channel multiplexer	SO16
M74HC158M1	Quad 2-Channel multiplexer (Inv.)	SO16
M74HC160M1	Sync. decade counter with async. clear	SO16
M74HC161M1	Sync. binary counter with async. clear	SO16
M74HC162M1	Sync. decade counter with sync. clear	SO16
M74HC163M1	Sync. binary counter with sync. clear	SO16
M74HC164M1	8 bit SIPO shift register	SO14
M74HC165M1	8 bit PISO shift register	SO16
M74HC166M1	8 bit PISO shift register	SO16
M74HC173M1	Quad D-type register (3-state)	SO16
M74HC174M1	Hex D-type Flip-Flop with clear	SO16
M74HC175M1	Quad D-type Flip-Flop with clear	SO16
M74HC181M1	Arithmetic logic unit function generator	SO24
M74HC182M1	Function Look ahead carry generator	SO16
M74HC190M1	BCD synchronous up/down counter	SO16
M74HC191M1	4 bit synchronous binary up/down counter	SO16
M74HC192M1	Synchronous up/down decade counter	SO16
M74HC193M1	Synchronous up/down binary counter	SO16
M74HC194M1	4 bit PIPO shift register	SO16
M74HC195M1	4 bit PIPO shift register	SO16
M74HC221M1	Dual monostable multivibrator	SO16
M74HC237M1	3 to 8 line decoder latch	SO16
M74HC238M1	3 to 8 line decoder	SO16

GENERAL PURPOSE & INDUSTRIAL

STANDARD LOGIC

HS - C²MOS LOGIC - M74HC SERIES (Continued)

Type	Description	Package
M74HC240M1	Octal bus buffer (3-State/Inv.)	SO20
M74HCT240M1	Octal bus buffer (3-State/Inv.)	SO20
M74HC241M1	Octal bus buffer (3-State)	SO20
M74HCT241M1	Octal bus buffer (3-State)	SO20
M74HC242M1	Quad bus transceiver (3-State/Inv.)	SO14
M74HC243M1	Quad bus transceiver (3-State)	SO14
M74HC244M1	Octal bus buffer (3-State)	SO20
M74HCT244M1	Octal bus buffer (3-state)	SO20
M74HC245M1	Octal bus transceiver (3-state)	SO20
M74HCT245M1	Octal bus transceiver (3-state)	SO20
M74HC251M1	8-Channel multiplexer (3-state)	SO16
M74HC253M1	Dual 4-Channel multiplexer (3-state)	SO16
M74HC257M1	Quad 2-Channel multiplexer (3-state)	SO16
M74HC258M1	Quad 2-Channel multiplexer (3-state/Inv.)	SO16
M74HC259M1	8 bit addressable latch	SO16
M74HC273M1	Octal D-type Flip-Flop with clear	SO20
M74HC279M1	Quad \bar{S} -R latch	SO16
M74HC280M1	9 bit parity generator	SO14
M74HC283M1	4 bit binary full adder	SO16
M74HC298M1	Quad 2-Channel multiplexer register	SO16
M74HC299M1	8 bit PIPO shift register (3-state)	SO20
M74HC323M1	8 bit PIPO shift register (3-state)	SO20
M74HC352M1	Dual 4-Channel multiplexer (Inv.)	SO16
M74HC353M1	Dual 4-Channel multiplexer (3-state/Inv.)	SO16
M74HC354M1	8 Channel multiplexer/register (3-state)	SO20
M74HC356M1	8 Channel multiplexer/register (3-state)	SO20
M74HC365M1	Hex bus buffer (3-state)	SO16
M74HC366M1	Hex bus buffer (3-state/Inv.)	SO16
M74HC367M1	Hex bus buffer (3-state)	SO16
M74HC368M1	Hex bus buffer (3-state/Inv.)	SO16
M74HC373M1	Octal D-type latch (3-state)	SO20
M74HCT373M1	Octal D-type latch (3-state)	SO20
M74HC374M1	Octal D-type Flip-Flop (3-state)	SO20
M74HCT374M1	Octal D-type Flip-Flop (3-state)	SO20
M74HC375M1	Quad D-type latch	SO16
M74HC377M1	Octal D-type Flip-Flop	SO20
M74HC386M1	Quad exclusive OR Gate	SO14
M74HC390M1	Dual decade counter	SO16
M74HC393M1	Dual binary counter	SO14
M74HC423M1	Dual monostable multivibrator with clear	SO16
M74HC533M1	Octal D-type latch (3-state/Inv.)	SO20
M74HC534M1	Octal D-type Flip-Flop (3-state/Inv.)	SO20
M74HC540M1	Octal bus buffer (3-state/Inv.)	SO20
M74HCT540M1	Octal bus buffer (3-state/Inv.)	SO20
M74HC541M1	Octal bus buffer (3-state)	SO20
M74HCT541M1	Octal bus buffer (3-state)	SO20
M74HC563M1	Octal D-type latch (3-state/Inv.)	SO20
M74HCT563M1	Octal D-type latch (3-state/Inv.)	SO20
M74HC564M1	Octal D-type Flip-Flop (3-state/Inv.)	SO20
M74HCT564M1	Octal D-type Flip-Flop (3-state/Inv.)	SO20
M74HC573M1	Octal D-type latch (3-state)	SO20
M74HCT573M1	Octal D-type latch (3-state)	SO20
M74HC574M1	Octal D-type Flip-Flop (3-state)	SO20
M74HCT574M1	Octal D-type Flip-Flop (3-state)	SO20
M74HC597M1	8 bit latch shift register	SO16
M74HC620M1	Octal bus transceiver (3-state/Inv.)	SO20
M74HC623M1	Octal bus transceiver (3-state)	SO20
M74HC640M1	Octal bus transceiver (3-state/Inv.)	SO20
M74HCT640M1	Octal bus transceiver (3-state/Inv.)	SO20
M74HC643M1	Octal bus transceiver (3-state)	SO20
M74HCT643M1	Octal bus transceiver (3-state)	SO20
M74HC646M1	Octal bus transceiver register (3-state)	SO24
M74HCT646M1	Octal bus transceiver register (3-state)	SO24
M74HC648M1	Octal bus transceiver register (3-state/Inv.)	SO24
M74HCT648M1	Octal bus transceiver register (3-state/Inv.)	SO24
M74HC651M1	Octal bus transceiver register (3-state/Inv.)	SO24
M74HCT651M1	Octal bus transceiver register (3-state/Inv.)	SO24
M74HC652M1	Octal bus transceiver register	SO24
M74HCT652M1	Octal bus transceiver register	SO24

GENERAL PURPOSE & INDUSTRIAL

STANDARD LOGIC

HS - C²MOS LOGIC - M74HC SERIES (Continued)

Type	Description	Package
M74HC688M1	8 bit equality comparator	SO20
M74HC690M1	Decade counter register (3-state)	SO20
M74HC691M1	4 bit binary counter register (3-state)	SO20
M74HC692M1	Decade counter register (3-state)	SO20
M74HC693M1	4 bit binary counter register (3-state)	SO20
M74HC696M1	U/D decade counter register (3-state)	SO20
M74HC697M1	U/D 4-bit binary counter/register (3-state)	SO20
M74HC698M1	U/D decade counter register (3-state)	SO20
M74HC699M1	U/D 4-bit binary counter/register (3-state)	SO20
M74HC4002M1	Dual 4-Input NOR Gate	SO14
M74HC4017M1	Decade counter/divider	SO16
M74HC4020M1	14-stage binary counter	SO16
M74HC4022M1	Octal counter/divider	SO16
M74HC4024M1	7-stage binary counter	SO14
M74HC4028M1	BCD to decimal decoder	SO16
M74HC4040M1	12-stage binary counter	SO16
M74HC4049BM1	Hex buffer/converter (Inv.)	SO16
M74HC4050BM1	Hex buffer/converter	SO16
M74HC4052M1	Dual 4-Channel analog multipl./demulti.	SO16
M74HC4053M1	Triple 2-Channel analog multipl./demulti.	SO16
M74HC4060M1	14-stage binary counter/oscillator	SO16
M74HC4066M1	Quad bilateral switch	SO14
M74HC4072M1	Dual 4 input OR Gate	SO14
M74HC4075M1	Triple 3-input OR Gate	SO14
M74HC4078M1	8-input NOR/OR Gate	SO14
M74HC4094M1	8 bit SIPO shift register latch (3-state)	SO16
M74HC4316M1	Quad bilateral switches	SO16
M74HC4511M1	BCD to 7-segment L/D/D (LED)	SO16
M74HC4514M1	4 to 16 line decoder latch	SO24
M74HC4515M1	4 to 16 line decoder latch (Inv.)	SO24
M74HC4518M1	Dual decade counter	SO16
M74HC4520M1	Dual 4 bit binary counter	SO16
M74HC4538M1	Dual monostable multivibrator	SO16
M74HC4543M1	BCD to 7-segment L/D/D (LCD)	SO16
M74HCT7007M1	Hex buffer	SO14
M74HC7266M1	Quad exclusive NOR Gate	SO14

LOW POWER SCHOTTKY - T74LS SERIES

Type	Description	Package
T74LS00M1	Quad 2-Input NAND Gate	SO14
T74LS01M1	Quad 2-Input NAND Gate (Open Collector)	SO14
T74LS02M1	Quad 2-Input NOR Gate	SO14
T74LS03AM1	Quad 2-Input NAND Gate (Open Collector)	SO14
T74LS04M1	Hex Inverter	SO14
T74LS05AM1	Hex Inverter (Open Collector)	SO14
T74LS08M1	Quad 2-Input AND Gate	SO14
T74LS09M1	Quad 2-Input AND Gate (Open Collector)	SO14
T74LS10M1	Triple 3-Input NAND Gate	SO14
T74LS11M1	Triple 3-Input AND Gate	SO14
T74LS12M1	Triple 3-Input NAND Gate (Open Collector)	SO14
T74LS13M1	Dual 4-Input NAND Schmitt Trigger	SO14
T74LS14M1	Hex Schmitt Trigger Inverter	SO14
T74LS15M1	Triple 3-Input AND Gate (Open Collector)	SO14
T74LS20M1	Dual 4-Input NAND Gate	SO14
T74LS21M1	Dual 4-Input AND Gate	SO14
T74LS22M1	Dual 4-Input NAND Gate (Open Collector)	SO14
T74LS26AM1	Quad 2-Input NAND Buffer (Open Collector)	SO14

GENERAL PURPOSE & INDUSTRIAL

STANDARD LOGIC

LOW POWER SCHOTTKY - T74LS SERIES (Continued)

Type	Description	Package
T74LS27M1	Triple 3-Input NOR Gate	SO14
T74LS28M1	Quad 2-Input NOR Buffer	SO14
T74LS30M1	8-Input NAND Gate	SO14
T74LS32M1	Quad 2-Input OR Gate	SO14
T74LS33M1	Quad 2-Input NOR Buffer (Open Collector)	SO14
T74LS37M1	Quad 2-Input NAND Buffer	SO14
T74LS38M1	Quad 2-Input NAND Buffer (Open Collector)	SO14
T74LS40M1	Dual 4-Input NAND Buffer	SO14
T74LS42M1	1-of-10 Decoder	SO16
T74LS51M1	Dual 2-Wide 2-Input/3-Input AND-OR-INV. Gate	SO14
T74LS54M1	2-3-3-2-Input AND-OR-INVERT Gate	SO14
T74LS55M1	2-Wide 4-Input AND-OR-INVERT Gate	SO14
T74LS74AM1	Dual D-Type Posit. Edge-Trigg. Flip-Flop	SO14
T74LS75M1	4-Bit D Latch	SO16
T74LS83AM1	4-Bit Full Adder with Fast Carry	SO16
T74LS86M1	Quad 2-Input Exclusive OR Gate	SO14
T74LS90M1	Decade Counter	SO14
T74LS93M1	4-Bit Binary Counter	SO14
T74LS95BM1	4-Bit Shift Register	SO14
T74LS109AM1	Dual JK Positive edge-Trigger. Flip-Flop	SO16
T74LS112AM1	Dual JK Negative edge-Trigger. Flip-Flop	SO16
T74LS113AM1	Dual JK Negative edge-Trigger. Flip-Flop	SO14
T74LS125AM1	Quad 3-State Buffer (Low Enable)	SO14
T74LS126AM1	Quad 3-State Buffer (High Enable)	SO14
T74LS132M1	Quad 2-Input Schmitt Trigger NAND Gate	SO14
T74LS133M1	13-Input NAND Gate	SO16
T74LS136M1	Quad 2-Input Exclus. OR Gate (Open Coll.)	SO14
T74LS138M1	1-of-8 Decoder/Demultiplexer	SO16
T74LS139M1	Dual 1-of-4 Decoder/Demultiplexer	SO16
T74LS148M1	8-Input to 3-Line Priority Encoder	SO16
T74LS151M1	8-Input Multiplexer	SO16
T74LS152M1	8-Input Multiplexer	SO14
T74LS153M1	Dual 4-Input Multiplexer	SO16
T74LS155M1	Dual 1-of-4 Decoder/Demultiplexer	SO16
T74LS156M1	Dual 1-of-4 Decoder/Demultiplexer (Open Coll.)	SO16
T74LS157M1	Quad 2-Input Multiplexer (Non inverting)	SO16
T74LS158M1	Quad 2-Input Multiplexer (Inverting)	SO16
T74LS164M1	8-Bit Shift Register (Serial-In Par.-Out)	SO14
T74LS166M1	8-Bit Shift Register (Par.-In Serial-Out)	SO16
T74LS168M1	Up/Down Decade Counter	SO16
T74LS169M1	Up/Down Binary Counter	SO16
T74LS170M1	4 × 4 Register File (Open Collector)	SO16
T74LS174M1	Hex D-Type Flip-Flop with Clear	SO16
T74LS175M1	Quad D-Type Flip-Flop with Clear	SO16
T74LS181M1	4-Bit ALU	SO24
T74LS190M1	Presettable BCD/Decade Up/Down Counter	SO16
T74LS191M1	Presettable 4-Bit Binary Up-Down Counter	SO16
T74LS192M1	Presettable BCD/Decade Up/Down Counter	SO16
T74LS193M1	Presettable 4-Bit Binary Up/Down Counter	SO16
T74LS194AM1	4-Bit Right/Left Shift Register	SO16
T74LS195AM1	4-Bit Shift Register	SO16
T74LS196M1	Decade Counter	SO14
T74LS197M1	4-Bit Binary Counter	SO14
T74LS240M1	Octal Inverting Bus/Line Driver (3-State)	SO20
T74LS241M1	Octal Bus Line Driver (3-State)	SO20
T74LS244M1	Octal Non Inverting Driver (3-State)	SO20
T74LS245M1	Octal Non Inverting Bus Transceiver (3-State)	SO20
T74LS248M1	BCD to 7-Segment Dec./Driv. with Pull-Ups	SO16
T74LS251M1	8-Input Multiplexer (3-State)	SO16
T74LS253M1	Dual 4-Input Multiplexer (3-State)	SO16
T74LS256M1	Dual 4-Bit Addressable Latch	SO16
T74LS257AM1	Quad 2-Input Multiplexer (3-State)	SO16
T74LS258AM1	Quad 2-Input Multiplexer (3-State)	SO16
T74LS259M1	8-Bit Addressable Latch	SO16
T74LS260M1	Dual 5-Input NOR Gate	SO14
T74LS266M1	Quad 2-Input Exclus. NOR Gate (Open Coll.)	SO14
T74LS273M1	Octal D-Type Flip-Flop with Master Reset.	SO20
T74LS279M1	Quad Set-Reset Latch	SO16
T74LS280M1	9-Bit Odd/Even Parity Generator/Checker	SO14
T74LS283M1	4-Bit Binary Full Adder (Rotated LS83A)	SO16

GENERAL PURPOSE & INDUSTRIAL

STANDARD LOGIC LOW POWER SCHOTTKY - T74LS SERIES (Continued)

Type	Description	Package
T74LS293M1	4-Bit Binary Counter	SO14
T74LS295AM1	4-Bit Shift Register (3-State)	SO14
T74LS298M1	Quad 2-Input Multiplexer with Output Lat.	SO16
T74LS352M1	Dual 4-Input Multiplexer (Inver. LS153)	SO16
T74LS353M1	Dual 4-Input Multiplexer (3-State LS352)	SO16
T74LS365AM1	Hex Buffer with Common Enable (3-State)	SO16
T74LS366AM1	Hex Inv. Buffer with Common Enable (3-State)	SO16
T74LS367AM1	Hex Buffer, 4-Bit and 2-Bit (3-State)	SO16
T74LS368AM1	Hex Inver. Buffer, 4-Bit and 2-Bit (3-State)	SO16
T74LS373M1	Octal Transparent Latch (3-State)	SO20
T74LS374M1	Octal D-Type Flip-Flop (3-State)	SO20
T74LS377M1	Octal D-Type Flip-Flop with Common Enable	SO20
T74LS378M1	Hex D-Type Flip-Flop with Enable	SO16
T74LS379M1	4-Bit D-Type Flip-Flop with Enable	SO16
T74LS390M1	Dual Decade Counter	SO16
T74LS393M1	Dual 4-Bit Binary Counter	SO14
T74LS395M1	4-Bit Shift Register (3-State)	SO16
T74LS399M1	Quad 2-Input Multiplexer with Output Register	SO16
T74LS490M1	Dual Decade Counter	SO16
T74LS533M1	Octal Transparent Latch (3-State)	SO20
T74LS534M1	Octal D-Type Flip-Flop (3-State)	SO20
T74LS540M1	Octal Inverting Buffer/Line Driver (3-State)	SO20
T74LS541M1	Octal Buffer/Line Driver (3-State)	SO20
T74LS645M1	Octal Non Inverting Bus Transceiver (3-State)	SO20
T74LS670M1	4 × 4 Register File (3-State)	SO16

MILITARY AND AEROSPACE

J-FET and bipolar op-amps, bipolar comparators, EF 6800 / Z80 / TS 68000 / Z8000 families, EPROM, CMOS 4000B and HS-C²MOS series, analogue cells and arrays, semicustom products could be encapsulated in leadless chip carrier, tested and screened according to any military and space procedures, in our plants specialized for military assemblies.

ANALOGUE CELLS AND ARRAYS

LINEAR BIPOLAR «POLYUSE»

Type	Description	Package
TSFAxx	1 customization level, 20V, 500MHz	
TSFA04	46 standard NPN, 32 PNP, 300 resistors	SO16/18/20/24 Wide - PLCC28
TSFA08	92 standard NPN, 60 PNP, 600 resistors	SO18/24/28 Wide - PLCC28/44
TSFK09	1 customization level, 15V, 3000MHz, 188 NPN, 28 PNP, 686 resistors	SO16/18/20/24/28 Wide - PLCC28

ANALOGUE CELLS AND ARRAYS

BIPOLAR MIXED ANALOGUE DIGITAL ARRAYS

Type	Description	Package
TSFJ series	2 metal layer - 15V - 3GHZ Linear, Power, ECL, I2L, Built-in functions (Bandgap, Oscillator, Regulator, R-2R ladder)	
TSFJ04	6 Linear*, 2 Power* tiles, 54 I2L operators	SO8/14/16 Narrow - SO16 Wide
TSFJ06	8 Linear*, 4 Power* tiles, 135 I2L operators	SO16 Narrow - SO16/18/20 Wide - PLCC28
TSFJ09	10 Linear*, 4 Power*, 8 ECL* tiles, 162 I2L operators	SO16 Narrow - PLCC28
TSFJ13	14 Linear*, 4 Power*, 8 ECL* tiles, 324 I2L operators	SO16/18/20/24 Wide
TSFJ23	24 Linear*, 8 Power*, 10 ECL* tiles, 486 I2L operators	SO16/18/20/24/28 Wide - PLCC28 SO20/24/28 Wide - PLCC28/44

* 1 Linear tile is equivalent to 1 op-amp (as 124).

1 Power tile allows to drive up to 200 mA.

2 ECL tiles are equivalent to 1 D Flip-Flop.

HCMOS MIXED ANALOGUE DIGITAL STANDARD CELLS

Type	Description	Package
TSGSM series	Integration of high level analogue and digital functions. Analogue library : 80 cells (ADC - DAC - Filters - Comparators - Amplifiers - Reference voltage...) Digital library : 110 hard macros + soft macros.	SO8/14/16 Narrow - SO16/18/20/24/28 Wide PLCC28/44/68 - QFP40

HCMOS MASK PROGRAMMABLE FILTERS (MPF)

STANDARD ANALOGUE SWITCHED CAPACITOR FILTERS (MPF)

Type	Description	Package
TSG8510	5th order Cauer (elliptic) - Low pass (33 dB stopband)	SO16 Wide
TSG8511	7th order Cauer (elliptic) - Low pass (55 dB stopband)	SO16 Wide
TSG8512	7th order Cauer (elliptic) - Low pass (85 dB stopband)	SO16 Wide
TSG8513	8th order Chebychev - Low pass (0.15 dB ripple)	SO16 Wide
TSG8514	8th order Butterworth - Low pass (Max. flat)	SO16 Wide
TSG8530	3rd order Cauer - High pass	SO16 Wide
TSG8531	6th order Cauer - High pass	SO16 Wide
TSG8532	6th order Chebychev - High pass	SO16 Wide
TSG8540	6th order rejector (Notch)	SO16 Wide
TSG8550	6th order Cauer - Band pass (Q = 8)	SO16 Wide
TSG8551	8th order - High selectivity - Band pass (Q = 35)	SO16 Wide
TSG8670	Voice grade Dual filter for telephone line interface	SO18 Wide
TSG8751	4th order - High selectivity - Band pass (Q = 25)	SO16 Wide

«GATE ARRAY» FILTERS

Type	Description	Package
TSGF04	Up to 4th order filter array + 1 uncommitted Op-Amp	SO16 Wide
TSGF08	Up to 8th order filter array + 2 uncommitted Op-Amps	SO16 Wide
TSGF12	Up to 12th order filter array + 2 uncommitted Op-Amps (either 1 or 2 filters on chip)	SO18/24 Wide

ANALOGUE CELLS AND ARRAYS

HCMOS MASK PROGRAMMABLE FREQUENCY DETECTORS

Type	Description	Package
TSGF88 series	Serial or parallel interfaces for direct control of the filter frequency by a microprocessor - 2nd to 8th order switched capacitor filter included. Antialiasing filter integrated	SO24 Wide
TSG8852	Butterworth 8th order band pass filter included	SO24 Wide

SEMICUSTOM PRODUCTS

CHANNELLED ARRAYS

HSG 3000 SERIES - 3.5 micron HCMOS technology

Typical delay 5.0 ns for 2-input NAND gate

Type	Gate complexity*	Max I/O Pads	V _{DD} Pads	V _{SS} Pads	Max Pads
HSG3020	272	32	1	3	36
HSG3030	342	36	1	3	40
HSG3040	420	40	1	3	44
HSG3060	600	48	1	3	52
HSG3080	812	56	1	3	60
HSG3110	1056	64	1	3	68
HSG3130	1332	72	1	3	76
HSG3170	1722	82	1	3	86
HSG3210	2162	92	1	3	96
HSG3250	2550	100	1	3	104

* 1 gate = 2 pairs of N & P transistors (equivalent to 2 input NAND).

HSG 7000 SERIES - 2 micron HCMOS technology

Typical delay 1.4 ns for 2-input NAND gate

Type	Gate Complexity*	Max Pads		Max I/O Pads	
		Plastic or Ceramic	Ceramic	Plastic or Ceramic	Ceramic
HSG7080	880	52	68	44	60
HSG7140	1443	66	86	58	78
HSG7220	2224	78	106	70	98
HSG7320	3192	96	126	80	112
HSG7420	4242	114	150	98	134
HSG7600	6072	138	186	122	170
HSG7840	8370	166	222	150	206
HSG71000	10013	174	232	158	216

* 1 gate = 2 pairs of N & P transistors (equivalent to 2 input NAND).

SEA OF GATES - CHANNELLESS ARRAYS

ISB 9000 SERIES - 1.5 micron HCMOS technology

Typical delay 0.7 ns for 2-input NAND gate

Type	Total sites*	Usable sites*	Max Pads**
ISB9003	204	184	28
ISB9008	572	486	44
ISB9015	1036	829	58
ISB9023	1564	1173	72
ISB9038	2530	1897	88
ISB9055	3696	2587	108
ISB9085	5644	3950	132
ISB9122	7980	5187	158
ISB9165	10848	7051	184
ISB9201	13090	7749	200

* 1 site = 3 pairs of N & P transistors.

** The number of max pads includes power pads, V_{SS}, V_{DD}.

SEMICUSTOM PRODUCTS

SEA OF GATE - «CONTINUOUS ARRAYS»™⁽¹⁾

ISB 12000 SERIES - 1.2 micron HCMOS technology

Typical delay 0.3 ns for 2-input NAND gate

Type	Total gates	Usable gates	Max Pads	Max I/O Pads
ISB12008	8000	3000	88	76
ISB12011	11520	4500	104	92
ISB12015	15680	6000	120	104
ISB12020	20480	8000	136	120
ISB12025	25920	10000	152	136
ISB12038	38720	15000	184	164
ISB12054	54080	20000	216	200
ISB12076*	76880	30000	256	232
ISB12103*	103680	40000	296	256**
ISB12128*	128000	50000	328	256**

* This type of die size does not permit surface mount technology.

(1) CONTINUOUS ARRAY is a trademark of INNOVATIVE SILICON TECHNOLOGY SpA.

** I/O signals currently limited to 256 by tester constraints.

STANDARD CELLS

CB200 SERIES - 1.5 micron HCMOS technology

Typical delay 0.7 ns for 2-input NAND gate *

Type	Description
CB200 series	Macrocell library plus RAM, ROM, Adder, ALU and Multiplier Megacells

* 1 gate = 2 pairs of N & P transistors.

CB300 SERIES - 1.5 micron HCMOS technology

Typical delay 0.7 ns for 2-input NAND gate *

Type	Description
CB300 series	Macrocell library plus RAM, ROM, Adder, ALU, Multiplier Megacells and Analogue cells (comparators, operational amplifiers, voltage reference...)

* 1 gate = 2 pairs of N & P transistors.

PACKAGE RANGE

HSG 3000 SERIES

Type	Package type	Pin count availability
HSG3020	PLCC LLCC SO	20/28/44 28 16/20/24/28
HSG3030	PLCC LLCC CLCC SO	20/28/44 28/44 44 16/20/24/28
HSG3040	PLCC LLCC CLCC SO	20/28/44 28/44 44 16/18/20/24/28
HSG3060	PLCC LLCC CLCC SO	20/28/44/68 28/44 44 16/18/20/24/28
HSG3080	PLCC LLCC CLCC SO	20/28/44/68 28/44/52 44 18

Type	Package type	Pin count availability
HSG3110	PLCC LLCC CLCC SO	20/28/44/68 28/44/52 44 18
HSG3130	PLCC LLCC CLCC	20/28/44/68/84 44/52/84 44/84
HSG3170	PLCC LLCC CLCC PQFP	28/44/68/84 44/52/68/84 44/68/84 64/80/100
HSG3210	PLCC LLCC CLCC PQFP	44/68/84 52/68/84 68/84 64/80/100
HSG3250	PLCC LLCC CLCC PQFP	44/68/84 52/68/84 68/84 64/80/100

SEMICUSTOM PRODUCTS

PACKAGE RANGE

HSG 7000 SERIES

Type	Package type	Pin count availability
HSG7080	PLCC LLCC CLCC SO	20/28/44 28/44 44 16/18/20/24/28
HSG7140	PLCC LLCC CLCC SO	20/28/44/68 28/44/52 44 18
HSG7220	PLCC LLCC CLCC	28/44/68/84 44/52 44/68/84
HSG7320	PLCC LLCC CLCC PQFP	28/44/68/84 52/68/84 44/68/84 64/80/100

Type	Package type	Pin count availability
HSG7420	PLCC LLCC CLCC PQFP	44/68/84 52/68/84 68/84 64/80/100
HSG7600	PLCC LLCC CLCC PQFP	68/84 68/84 68/84 100/128
HSG7840	PLCC LLCC CLCC PQFP	68/84 84 68/84 128
HSG71000	PLCC LLCC CLCC PQFP	68/84 84 68/84 128/160

ISB 9000 SERIES

Type	Package type	Pin count availability
ISB9003	PLCC LLCC SO	20/28 28 16/20/24/28
ISB9008	PLCC LLCC SO	20/28 28 16/18/20/24/28
ISB9015	PLCC LLCC CLCC SO	20/28/44 28/44 44 18/24/28
ISB9023	PLCC LLCC CLCC SO	20/28/44/68 28/44 44 18
ISB9038	PLCC LLCC CLCC	28/44/68 44/52 44

Type	Package type	Pin count availability
ISB9055	PLCC LLCC CLCC PQFP	28/44/68/84 52/68/84 68/84 64/80/100
ISB9085	PLCC LLCC CLCC PQFP	44/68/84 52/68/84 68/84 64/80/100
ISB9122	PLCC LLCC CLCC PQFP	84 68/84 68/84 100/128
ISB9165	PLCC LLCC CLCC PQFP	68/84 84 84 128
ISB9201	PLCC LLCC CLCC PQFP	68/84 84 84 128/160

ISB 12000 SERIES

Type	Package type	Pin count availability
ISB12008	PLCC	28/44/68/84
ISB12011	PLCC PQFP	44/68/84 100
ISB12015	PLCC PQFP	68/84 100/144
ISB12020	PLCC PQFP	68/84 100/144

Type	Package type	Pin count availability
ISB12025	PLCC PQFP	68/84 144/160
ISB12038	PQFP	144/160
ISB12054	PQFP	160/196

ISB12076, ISB12103 and ISB12128 die sizes do not permit surface mount technology.

CB200 AND CB300 SERIES

Type	Package type	Pin count availability
CB200 and CB300	PLCC LLCC CLCC PQFP SO	20/28/44/68/84 20/28/44/52/68/84 28/44/68/84 64/80/100/128/160 16/18/20/24/28

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ANALOGUE CELLS AND ARRAYS

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BIPOLAR MIXED ANALOGUE DIGITAL ARRAYS	259
HCMOS MIXED ANALOGUE DIGITAL STANDARD CELLS	259
HCMOS MASK PROGRAMMABLE FILTERS (MPF)	260
HCMOS MASK PROGRAMMABLE FREQUENCY DETECTORS	260

- A complete range of Digital, Analogue and mixed Analogue and Digital products either in HCMOS, Bipolar and BICMOS technologies.

- Cell libraries supported

- 1 - on in-house developed CAD tools (VAX, IBM, SUN hardwares) available in regional design centers.

- 2 - on most popular Engineering workstations : Mentor Graphics, Daisy Systems, Valid, PC, UNIX based stations.

- An international network of regional Design Centers installed to technically support customer circuit designs :

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Phoenix
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Singapore
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- Europe : London (Marlow)
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Paris (Gentilly)
Stockholm (Kista)

LINEAR BIPOLAR «POLYUSE»

Type	Description	Package
TSFAxx	1 customization level, 20V, 500MHz	
TSFA04	46 standard NPN, 32 PNP, 300 resistors	DIP8/14/16/18/20/24 SO16/18/20/24 Wide - PLCC28
TSFA08	92 standard NPN, 60 PNP, 600 resistors	DIP24/28/40 SO18/24/28 Wide - PLCC28/44
TSFK09	1 customization level, 15V, 3GHz, 188 NPN, 28 PNP, 686 resistors	DIP8/14/16/18/20/24/28 SO16/18/20/24/28 Wide - PLCC28

BIPOLAR MIXED ANALOGUE DIGITAL ARRAYS

Type	Description	Package
TSFJ series	2 metal layer - 15V - 3GHZ Linear, Power, ECL, I2L, Built-in functions (Bandgap, Oscillator, Regulator, R-2R ladder)	
TSFJ04	6 Linear*, 2 Power* tiles, 54 I2L operators	DIP8/14/16 SO8/14/16 Narrow - SO16 Wide
TSFJ06	8 Linear*, 4 Power* tiles, 135 I2L operators	DIP8/14/16/18/20 SO16 Narrow - SO16/18/20 Wide / PLCC28
TSFJ09	10 Linear*, 4 Power*, 8 ECL* tiles, 162 I2L operators	DIP8/14/16/18/20 - SO16 Narrow SO16/18/20/24 Wide - PLCC28
TSFJ13	14 Linear*, 4 Power*, 8 ECL* tiles, 324 I2L operators	DIP14/16/18/20/24/28 SO16/18/20/24/28 Wide - PLCC28
TSFJ23	24 Linear*, 8 Power*, 10 ECL* tiles, 486 I2L operators	DIP20/24/28/40 SO20/24/28 Wide / PLCC28/44

* 1 Linear tile is equivalent to 1 op.amp (as 124).

1 Power tile allows to drive up to 200 mA.

2 ECL tiles are equivalent to 1 D Flip-Flop.

HCMOS MIXED ANALOGUE DIGITAL STANDARD CELLS

Type	Description	Package
TSGSM series	Integration of high level analogue and digital functions. Analogue library : 80 cells (ADC - DAC - Filters - Comparators - Amplifiers - Reference voltage...) Digital library : 110 hard macros + soft macros.	DIP8/14/16/18/20/24/28/40 SO8/14/16 Narrow SO16/18/20/24/28 Wide PLCC28/44/68 - QFP40

HCMOS MASK PROGRAMMABLE FILTERS (MPF)

STANDARD ANALOGUE SWITCHED CAPACITOR FILTERS

Type	Description	Package
TSG8510	5th order Cauer (elliptic) - Low pass (33 dB stopband)	DIP16, SO16 Wide
TSG8511	7th order Cauer (elliptic) - Low pass (55 dB stopband)	DIP16, SO16 Wide
TSG8512	7th order Cauer (elliptic) - Low pass (85 dB stopband)	DIP16, SO16 Wide
TSG8513	8th order Chebychev - Low pass (0.15 dB ripple)	DIP16, SO16 Wide
TSG8514	8th order Butterworth - Low pass (Max. flat)	DIP16, SO16 Wide
TSG8530	3rd order Cauer - High pass	DIP16, SO16 Wide
TSG8531	6th order Cauer - High pass	DIP16, SO16 Wide
TSG8532	6th order Chebychev - High pass	DIP16, SO16 Wide
TSG8540	6th order rejector (Notch)	DIP16, SO16 Wide
TSG8550	6th order Cauer - Band pass (Q = 8)	DIP16, SO16 Wide
TSG8551	8th order - High selectivity - Band pass (Q = 35)	DIP16, SO16 Wide
TSG8670	Voice grade Dual filter for telephone line interface	DIP18, SO18 Wide
TSG8751	4th order - High selectivity - Band pass (Q = 25)	DIP14, SO16 Wide

«GATE ARRAY» FILTERS

Type	Description	Package
TSGF04	Up to 4th order filter array + 1 uncommitted Op-Amp	DIP14, SO16 Wide
TSGF08	Up to 8th order filter array + 2 uncommitted Op-Amps	DIP16, SO16 Wide
TSGF12	Up to 12th order filter array + 2 uncommitted Op-Amps (either 1 or 2 filters on chip)	DIP16/18/20, SO18/24 Wide

HCMOS MASK PROGRAMMABLE FREQUENCY DETECTORS

Type	Description	Package
TSGF88 series	Serial or parallel interfaces for direct control of the filter frequency by a microprocessor - 2nd to 8th order switched capacitor filter included. Antialiasing filter integrated	DIP24, SO24 Wide
TSG8852	Butterworth 8th order band pass filter included	DIP24, SO24 Wide

SEMICUSTOM PRODUCTS

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SEA OF GATES - «CONTINUOUS ARRAYS»™	264
STANDARD CELLS	264
PACKAGE RANGE	264

- Integration of random logic :
 - Channelled arrays
 - Sea of gates - Channelless arrays
- Integration of random logic and megafunctions (RAM, ROM, ALU, Multiplier...) :
 - Sea of gates - «CONTINUOUS ARRAYS»™
 - Standard cells

- A complete range of Digital, Analogue and mixed Analogue and Digital products either in HCMOS, Bipolar and BICMOS technologies.

- Cell libraries supported

- 1 - on in-house developed CAD tools (VAX, IBM, SUN hardwares) available in regional design centers.

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CHANNELLED ARRAYS

HSG 3000 SERIES - 3.5 micron HCMOS technology
Typical delay 5.0 ns for 2-input NAND gate

Type	Gate complexity*	Max I/O Pads	V _{DD} Pads	V _{SS} Pads	Max Pads
HSG3020	272	32	1	3	36
HSG3030	342	36	1	3	40
HSG3040	420	40	1	3	44
HSG3060	600	48	1	3	52
HSG3080	812	56	1	3	60
HSG3110	1056	64	1	3	68
HSG3130	1332	72	1	3	76
HSG3170	1722	82	1	3	86
HSG3210	2162	92	1	3	96
HSG3250	2550	100	1	3	104

* 1 gate = 2 pairs of N & P transistors (equivalent to 2 input NAND).

HSG 7000 SERIES - 2 micron HCMOS technology
Typical delay 1.4 ns for 2-input NAND gate

Type	Gate complexity*	Max Pads		Max I/O Pads	
		Plastic or Ceramic	Ceramic	Plastic or Ceramic	Ceramic
HSG7080	880	52	68	44	60
HSG7140	1443	66	86	58	78
HSG7220	2224	78	106	70	98
HSG7320	3192	96	126	80	112
HSG7420	4242	114	150	98	134
HSG7600	6072	138	186	122	170
HSG7840	8370	166	222	150	206
HSG71000	10013	174	232	158	216

* 1 gate = 2 pairs of N & P transistors (equivalent to 2 input NAND).

SEA OF GATES - CHANNELLESS ARRAYS

ISB 9000 SERIES - 1.5 micron HCMOS technology
Typical delay 0.7 ns for 2-input NAND gate

Type	Total sites*	Usable sites*	Max Pads**
ISB9003	204	184	28
ISB9008	572	486	44
ISB9015	1036	829	58
ISB9023	1564	1173	72
ISB9038	2530	1897	88
ISB9055	3696	2587	108
ISB9085	5644	3950	132
ISB9122	7980	5187	158
ISB9165	10848	7051	184
ISB9201	13090	7749	200

* 1 site = 3 pairs of N & P transistors.

** The number of max pads includes power pads, V_{SS}, V_{DD}.

SEA OF GATES - «CONTINUOUS ARRAYS»™⁽¹⁾

ISB 12000 SERIES - 1.2 micron HCMOS technology

Typical delay 0.3 ns for 2-input NAND gate

Type	Total gates	Usable gates	Max Pads	Max I/O Pads
ISB12008	8000	3000	88	76
ISB12011	11520	4500	104	92
ISB12015	15680	6000	120	104
ISB12020	20480	8000	136	120
ISB12025	25920	10000	152	136
ISB12038	38720	15000	184	164
ISB12054	54080	20000	216	200
ISB12076	76880	30000	256	232
ISB12103	103680	40000	296	256 *
ISB12128	128000	50000	328	256 *

* I/O signals currently limited to 256 by tester constraints.

(1) CONTINUOUS ARRAY is a trademark of INNOVATIVE SILICON TECHNOLOGY SpA.

STANDARD CELLS

CB200 SERIES - 1.5 micron HCMOS technology

Typical delay 0.7 ns for 2-input NAND gate *

Type	Description
CB200 series	Macrocell library plus RAM, ROM, Adder, ALU and Multiplier Megacells

* 1 gate = 2 pairs of N & P transistors.

CB300 SERIES - 1.5 micron HCMOS technology

Typical delay 0.7 ns for 2-input NAND gate *

Type	Description
CB300 series	Macrocell library plus RAM, ROM, Adder, ALU, Multiplier Megacells and Analogue cells (comparators, operational amplifiers, voltage reference...)

* 1 gate = 2 pairs of N & P transistors.

PACKAGE RANGE

IST Semicustom production circuits are offered within an extended package product range :

PDIP : Plastic Dual-in-line package
 CDIP : Ceramic Dual-in-line package
 PPGA : Plastic Pin Grid Array
 CPGA : Ceramic Pin Grid Array
 PLCC : Plastic Leaded Chip Carrier
 LLCC : Leadless Ceramic Chip Carrier
 CLCC : Ceramic Leaded Chip Carrier
 PQFP : Plastic Quad Flat Pack
 SO : Plastic Small Outline

The prototype parts are delivered only in ceramic packages, which are in most of cases mechanically compatible with the production package, i.e. :

Prototype	Production
CLCC	PLCC
CDIL	PDIP, SO
CQFP	PQFP
CPGA	PPGA

PACKAGE RANGE

HSG 3000 SERIES

Type	Package type	Pin count availability
HSG3020	PDIP PLCC LLCC CDIP SO	16/18/20/22/24/28/40/48 20/28/44 28 16/18/20/24/28/40 16/20/24/28
HSG3030	PDIP PLCC LLCC CLCC CDIP CPGA SO	16/18/20/22/24/28/40/48 20/28/44 28/44 44 16/18/20/24/28/40 64 16/20/24/28
HSG3040	PDIP PLCC LLCC CLCC CDIP CPGA SO	16/18/20/22/24/28/40/48 20/28/44 28/44 44 16/18/20/24/28/40 64 16/18/20/24/28
HSG3060	PDIP PLCC LLCC CLCC CDIP CPGA SO	18/20/22/24/28/40/48/64 20/28/44/68 28/44 44 16/18/24/28/40 64 16/18/20/24/28
HSG3080	PDIP PLCC LLCC CLCC CDIP CPGA SO	22/24/28/40/48/64 20/28/44/68 28/44/52 44 24/28/40/48 64 18

Type	Package type	Pin count availability
HSG3110	PDIP PLCC LLCC CLCC CDIP CPGA SO	22/24/28/40/48/64 20/28/44/68 28/44/52 44 24/28/40/68 64 18
HSG3130	PDIP PLCC LLCC CLCC CDIP CPGA	24/28/40/48/64 20/28/44/68/84 44/52/84 44/84 24/28/40/48 64
HSG3170	PDIP PLCC LLCC CLCC CDIP CPGA PQFP	24/28/40/48/64 28/44/68/84 44/52/68/84 44/68/84 24/28/40/48 64/68/84 64/80/100
HSG3210	PDIP PLCC LLCC CLCC CDIP CPGA PQFP	28/40/48/64 44/68/84 52/68/84 68/84 24/40/48 64/68/84/100/120 64/80/100
HSG3250	PDIP PLCC LLCC CLCC CDIP CPGA PQFP	28/40/48/64 44/68/84 52/68/84 68/84 40/48 64/68/84/100/120 64/80/100

HSG 7000 SERIES

Type	Package type	Pin count availability
HSG7080	P DIP PLCC LLCC CLCC CDIP CPGA SO	22/24/28/40/48/64 20/28/44 28/44 44 24/28/40 64 16/18/20/24/28
HSG7140	P DIP PLCC LLCC CLCC CDIP CPGA SO	22/24/28/40/48/64 20/28/44/68 28/44/52 44 24/28/40/48 64 18
HSG7220	P DIP PLCC LLCC CLCC CDIP CPGA	24/28/40/48/64 28/44/68/84 44/52 44/68/84 24/40/48 64/68/84
HSG7320	P DIP PLCC LLCC CLCC CDIP CPGA PQFP	28/40/48/64 28/44/68/84 52/68/84 44/68/84 24/40/48 64/68/84 64/80/100

Type	Package type	Pin count availability
HSG7420	P DIP PLCC LLCC CLCC CDIP CPGA PQFP	28/40/48/64 44/68/84 52/68/84 68/84 48 64/68/84/100 64/80/100
HSG7600	P DIP PLCC LLCC CLCC CPGA PQFP	48 68/84 68/84 68/84 68/84/100/120/144/180 100/128
HSG7840	PLCC LLCC CLCC CPGA PQFP	68/84 84 68/84 100/120/144/180 128
HSG71000	PLCC LLCC CLCC CPGA PQFP	68/84 84 68/84 100/120/144/180 128/160

PACKAGE RANGE

ISB 9000 SERIES

Type	Package type	Pin count availability
ISB9003	PDIP PLCC LLCC CDIP SO	16/18/20/22/24/28/40 20/28 28 24/28/40 16/20/24/28
ISB9008	PDIP PLCC LLCC CDIP SO	16/18/20/22/24/28/40/48 20/28 28 24/28/40 16/18/20/24/28
ISB9015	PDIP PLCC LLCC CLCC CDIP CPGA SO	22/24/28/40/48 20/28/44 28/44 44 24/28/40 64 18/24/28
ISB9023	PDIP PLCC LLCC CLCC CDIP CPGA SO	22/24/28/40/48/64 20/28/44/68 28/44 44 24/28/40 64 18
ISB9038	PDIP PLCC LLCC CLCC CDIP CPGA	24/28/40/48/64 28/44/68 44/52 44 24/40/48 64

Type	Package type	Pin count availability
ISB9055	PDIP PLCC LLCC CLCC CDIP CPGA PQFP	28/40/48/64 28/44/68/84 52/68/84 68/84 40/48 64 64/80/100
ISB9085	PDIP PLCC LLCC CLCC CPGA PQFP	28/40/48/64 44/68/84 52/68/84 68/84 68/84 64/80/100
ISB9122	PLCC LLCC CLCC CPGA PQFP	84 68/84 68/84 68/84/100/120 100/128
ISB9165	PLCC LLCC CLCC CPGA PQFP	68/84 84 84 100/120/144/180 128
ISB9201	PLCC LLCC CLCC CPGA PQFP	68/84 84 84 100/120/144/180 128/160

ISB 12000 SERIES

Type	Package type	Pin count availability
ISB12008	PLCC PPGA CPGA	28/44/68/84 68 68/84
ISB12011	PLCC PPGA CPGA PQFP	44/68/84 84 68/84/100 100
ISB12015	PLCC PPGA CPGA PQFP	68/84 84/120 68/84/100/120 100/144
ISB12020	PLCC PPGA CPGA PQFP	68/84 84/120/180 84/100/120/144/180 100/144

Type	Package type	Pin count availability
ISB12025	PLCC PPGA CPGA PQFP	68/84 120/180 100/120/144/180 144/160
ISB12038	PPGA CPGA PQFP	120/180 120/144/180 144/160
ISB12054	PPGA PQFP	180/224 160/196
ISB12076	PPGA	180/224
ISB12103	PPGA	224/296
ISB12128	PPGA	224/296

CB200 AND CB300 SERIES

Type	Package type	Pin count availability
CB200 and CB300	PDIP PLCC LLCC CLCC CDIP CPGA PPGA PQFP SO	16/18/20/22/24/28/40/48/64 20/28/44/68/84 20/28/44/52/68/84 28/44/68/84 16/18/20/24/28/40/48 64/68/84/100/120/144/180 64/68/84/100/120/144 64/80/100/128/160 16/18/20/24/28

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